

Volume 38, Number 1

February 1995

Gole-Ho 2517-204 P00788
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The Academy of Management



JOURNAL

Special Research Forum: Intra- and Interorganizational Cooperation

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The *Academy of Management Journal* (ISSN 0001-4273) is published by the Academy of Management six times a year in February, April, June, August, October, and December. The address of the office of publication is Academy of Management/Pace University, P.O. Box 3020, 235 Elm Rd., Briarcliff Manor, NY 10510-8020.

Subscription rates for *AMJ* only: in U.S., Mexico, and Canada, \$65 for one year, \$123.50 for two years, \$175.50 for three years. Rates for overseas: \$75 for one year, \$142.50 for two years, \$213.75 for three years. All payable in U.S. dollars. Subscriptions and orders for back issues should be sent to Academy of Management, Pace University, P.O. Box 3020, 235 Elm Rd., Briarcliff Manor, NY 10510-8020. For membership information, call the Academy of Management business office, (914) 923-2607, fax (914) 923-2615.

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Printed in the United States. Typesetting, presswork, binding, and mailing by The Sheridan Press, Hanover, PA.

Academy of Management Journal, Publication No. 900920.

Second class postage is paid at Briarcliff Manor, NY, and additional offices.

POSTMASTER—Send address changes to *Academy of Management Journal*, Pace University, 235 Elm Rd., P.O. Box 3020, Briarcliff Manor, NY 10510-8020.

ISSN, 0001-4273

FROM THE EDITOR

This is just a short one, mostly to take note of the publication of the first special research forum during my term as editor. As you've probably seen, we have a number more in process, but this one was begun under Mike Hitt's editorship and completed under mine.

I won't try to explain the content or the focus of the forum since the first paper is by the three guest co-editors, who explain it far better than I could do. I do, however, want to say something about the process we used. All papers were submitted to me at the *AMJ* office, but reviewers were assigned by Sue, Ken, or Steve. Completed reviews were sent back to one of them, and they made all the decisions concerning the manuscripts. That is, they functioned as guest editors, not consulting editors. This was a change in how things were done, and I, for one, was quite pleased with the results. All papers were blind reviewed as usual, and I am quite comfortable with the standards applied by our troika of editors; the papers presented here are the equal to any published in *AMJ*. I can take no credit for this—Mike Hitt selected the three of them, and they did all the work of quality control and the day-to-day management of the process. I know that they got some interesting insights into the job of editing, but they came through it in good shape (I think). More important, I want to thank them and all the reviewers for the research forum (listed following the papers) for the effort they put into this project. Great job one and all!

Angelo DeNisi

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INTRA- AND INTERORGANIZATIONAL COOPERATION: TOWARD A RESEARCH AGENDA

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The 1994 Special Research Forum on Intra- and Interorganizational Cooperation is dedicated to the proposition that issues of cooperation are fundamental to management success and of increasing importance in today's complex business world. After briefly reviewing the domain of cooperation, we use the content of the articles submitted for this special issue as a sample of current questions and research on cooperation and examine these studies relative to the domain. After introducing the work published here, we identify a set of questions pertinent to future research on cooperation.

In a series of military campaigns lasting until 448 B.C., a coalition of more than 20 Greek cities defeated the powerful empire of Persia. The success of the Greeks can be primarily attributed to their construction of the 200 ships used to defeat the Persian navy at Salamis in 480 B.C. The secret of the Greeks' victory was their conceptualizing the ships themselves as projectiles that could ram and sink enemy vessels. To do this successfully, however, the Greek ships had to be speedier and more maneuverable than the ships they were attacking, qualities that required a very high degree of cooperation among the ships' rowers. They had to row in virtually complete unison and be almost perfectly coordinated to outstrip and outmaneuver their opponents. Training and other methods of inducing rhythm and synchronization were important in achieving this high degree of cooperation and coordination among the rowers. Winning the battle, however, also depended upon the accurate coordination of the 200 ships into effective fleet attack formations. Otherwise the Greek ships could have interfered with each other, and chaos would have occurred. Additionally, attaining initial cooperation among the various Greek city states was important in defeating the Persians. This cooperative military achievement was the prerequisite for the subsequent flowering of Greek culture, with all of its contributions to the devel-

We thank Pamela Dufus, Martin Gannon, Edward Locke, and Cormac Mac Phionnlaoich for their comments on an earlier draft of this essay.

opment of the philosophical, scientific, political, economic, and educational systems of the Western world (McNeill, 1963).

This brief historical account suggests the difficulty, importance, and rewards of cooperation. The Greek's victory over Persia depended upon both intra- and interunit cooperation. Writers and scholars in the field of management have emphasized the critical importance of cooperation and coordination for the achievement of objectives. Fayol (1949), whom many consider the first classical management writer, listed coordination as one of the five critical elements or functions of management. He pointed to the necessity of harmonizing the separate activities and departments of an organization into a single whole. Later, Mayo (1945), and others from the human relations school of management scholarship, put special emphasis on the need for cooperation among the levels of an organization, especially the management and worker levels. Barnard (1938) conceptualized organizations as being, more than anything else, systems of cooperative effort and coordinated activities. Thompson's (1967) action theory of organization paid a great deal of attention to the different types of interdependence existing within organizations and to methods for achieving high levels of cooperation and coordination. Lawrence and Lorsch (1969) similarly defined an organization as a system of specialized interrelated behaviors of people that must be integrated if effective performance is to be achieved. They attributed the performance differences among the companies they studied in part to the effectiveness of the companies' integrating mechanisms.

More recently, writers have described in greater detail the relationship of cooperation to a number of antecedent and subsequent outcome variables. For example, looking at the relationship between cooperation, coordination, and performance, Beer, Eisenstat, and Spector (1990) pointed out that coordination is necessary for innovation and competitive success. They claimed that cooperation is a prerequisite of coordination and that motivational factors are in turn prerequisites of cooperation. Similarly, Thomas's (1992) review of the literature on conflict demonstrated that collaboration is related to high satisfaction for cooperating parties, high-quality working relationships, a large number of acceptable solutions, and high organizational performance. At the organizational level, Contractor and Lorange (1988) documented the positive relationship between cooperativeness among companies and strong levels of efficiency and profitability. Also, Buckley and Casson's (1988) research has suggested that some cooperative organizational relationships, such as joint ventures, provide cost savings because they reduce expensive monitoring costs for companies.

Although cooperation has long been recognized as crucial to the success of enterprises, there is evidence that its role will become even more important in the future. In particular, the success of emerging structural forms, such as the self-managed task team (Manz & Sims, 1993), the horizontal organization (Byrne, 1993), the network organization (Powell, 1990), the virtual corporation (Davidow & Malone, 1992), and the international joint venture (Contractor & Lorange, 1988), rest largely on effective cooperation.

Moreover, a new market ethos, sometimes oriented toward new total quality management (TQM) philosophies, also underscores the need for cooperation throughout organizations. Indeed, McKenna and Wright (1992) pointed out that old metaphors likening organizations to machines and organisms are too simple to represent modern organizations. New metaphors, likening organizations to brains, families, and political arenas, all highlight different aspects of cooperative imperatives. Moreover, metaphors of competition as war and of success as winning no longer seem as valid in today's complex business environment as they did in earlier times.

Although these new organizational trends demand greater attention to issues of cooperation, variation in national cultures can also present significant challenges to achieving cooperation as organizations become increasingly global. For example, people tend to cooperate less in the United States than in Sweden and Japan (Cole, 1989). Cultural differences in legal systems and in the relationship between business and government can also affect attempts to build cooperation (Perrone, 1993). For example, in Japan it is common for competitors to cooperate with one another in new product development, whereas such activity has only recently become permissible or legal in the United States, under the Cooperative Research Act of 1984. This recognition of the importance of cultural differences is in line with growing evidence that U.S.-developed economic and psychological theories cannot be generalized to other nations with different cultures (Erez & Earley, 1993).

All of the developments just noted have forced scholars to question what they really know about cooperation and to ask whether past theories and research apply to new organizational forms and realities. These developments also highlight the growing importance of new related research areas, such as interpersonal trust, cross-functional boundary spanning, team behavior, and collaborative interorganizational relationships. Our primary goal in proposing the Special Research Forum on Intra- and Interfirm Cooperation was to encourage more work on these topics. We hoped that a focused research issue would give scholars an arena in which to present their empirical findings on this topic and to identify areas of future research need and opportunity.

THE DOMAIN OF COOPERATION

The literature on cooperation is rich in theory and diverse in its academic roots. Indeed, cooperation is a topic of interest in disciplines such as economics, sociology, anthropology, psychology, and political science as well as in organizational behavior, organization theory, and strategic management. To give an example of just how much work has been done in this area, one review of the cooperation and conflict literature in political science cited over 250 empirical studies on the subject of correlates of conflict and cooperation among political entities (Gibbs & Singer, 1993). Given the wide attention that has been devoted to the topic of cooperation, it is appropriate to provide some definitional categories that may inform our analysis of current research topics and trends.

One difficulty in interpreting the theory and research on cooperation stems from the numerous definitions of cooperation scholars have offered without making much attempt to reference other usages of the term. Most definitions of cooperation focus on the process by which individuals, groups, and organizations come together, interact, and form psychological relationships for mutual gain or benefit. More recently, Ring and Van de Ven (1994) made the definition of cooperation more dynamic by including the willingness of individuals to continue in cooperative relationships. Importantly, Ring and Van de Ven noted that cooperative relationships are "socially contrived mechanisms for collective action, which are continually shaped and restructured by actions and symbolic interpretations of the parties involved" (1994: 96).

At least two types of cooperative relationships can occur: the formal and the informal. Informal cooperation involves adaptable arrangements in which behavioral norms rather than contractual obligations determine the contributions of parties. Informal cooperative mechanisms are similar to Ouchi's (1980) clan structure, in which informal cultures and systems influence member behaviors. Axelrod (1984) discussed the conditions under which such cooperation spontaneously arises; these conditions include the parties' perceiving they will be in contact with each other for a long time, their believing it is to their advantage to cooperate, and their recognizing they must reciprocate for any benefits received, employing a tit for tat strategy. Astley (1984) referred to this type of cooperation as voluntaristic and organic.

However, cooperation can also be characterized by contractual obligations and formal structures of control. Ouchi (1980) described formal hierarchy, or rules and regulations, as the alternative to socialized control. For example, job design and definition can force individuals to work together, whereas organizational structures and processes can detail how departments and groups must function. Clearly, formal types of cooperation can evolve over time into informal types in which rules and regulations are no longer needed (Ring & Van de Ven, 1994).

The type of cooperation can also vary with how parties are connected to one another. Vertically linked individuals, groups, and organizations can cooperate—a superior and a subordinate, the top and bottom levels of an organization, even buying and selling organizations in an industry. Or horizontally linked parties can cooperate—workers engaged in a common task or even competitors in a single industry. Cooperation involving vertical links will differ from that involving horizontal links primarily in terms of interdependence. The level of parties' interdependence will generally be clearer and more direct in vertical links, especially those within an organization, than in horizontal links.

As is the case for most behaviors, an input-output model articulating the immediate antecedents and consequences of cooperation may be useful to explain its complexities. Although research has identified many determinants of cooperation, virtually all scholars have agreed that one especially

immediate antecedent is trust. Like other scholars, Ring and Van de Ven (1994) defined trust as an individual's confidence in the good will of the others in a given group and belief that the others will make efforts consistent with the group's goals. A belief that others will faithfully apply effort to achieve group goals may result in informal cooperation; a belief that a formal hierarchy will reward cooperative behavior may produce formal cooperation. Of course, trust itself has many antecedent conditions and has often been used as the dependent variable in studies of cooperation (Argyle, 1991).

Although cooperation can have many outcomes, one of the most sought after in an organizational setting is effective coordination, which is assumed to result in higher performance. Coordination concerns the combination of parts to achieve the most effective or harmonious results (Thompson, 1967). Coordination stemming from cooperation seems particularly important in today's new organizational forms, where relationships are much more voluntary and self-defined than organizationally mandated. If work is accomplished in a fluid, ever-changing pattern of relationships that cut across functional, hierarchical, and national boundaries, high levels of cooperation may allow for an efficient and harmonious combination of the parts leading to high performance.

WORK SUBMITTED FOR THE SPECIAL ISSUE

Forty-six articles were submitted for this special issue on cooperation. The issues addressed in this set of studies can be treated as a representative list of aspects of cooperation that are currently receiving empirical attention from management scholars. We reviewed some of the topics, theories, methods, and issues examined in the submitted research to highlight current themes as well as gaps and inconsistencies.

First, the vast majority of the submissions focused on cooperation between organizations (62%). The remaining articles were almost equally split between addressing cooperation between individuals (21%) and that between groups or departments (17%). We suspect that research on organizational cooperation was dominant because this topic has only recently been viewed as important, although research on cooperation between individuals and groups has a long history in psychology and sociology. Indeed, in the United States particularly, cooperation between organizations that otherwise compete has only recently been tolerated and, in some cases involving technology, has been actually promoted by the government (see, for example, the Browning, Beyer, and Shetler article in this issue). It is noteworthy that since cooperation at any level must ultimately be reduced to cooperation between individuals—such as managers from different organizations—the distinction between the levels is blurred. Thus, macro researchers can probably learn much about cooperation from past and current studies at the micro level.

Second, the majority of the submitted articles examined informal, as opposed to formal, aspects of cooperative relationships, or transitions from

formal relationships to informal ones (57%). The level or nature of trust, either as a theoretical concept or as the actual object of empirical study; as the independent or dependent variable, was an important aspect of many of these studies. Much of this research examined the process by which individuals come together, interact, and form psychological relationships, one aspect of which is their willingness to continue in cooperative associations over time.

Third, 74 percent of the research focused on cooperation involving horizontal links. This focus is also consistent with current trends toward examining how to get individuals, groups, and organizations at the same level, who normally compete with one another, to cooperate. Some of the submitted research examined cooperation between competing mental health agencies, financial institutions, wineries, high-technology firms, and equity joint ventures or cooperation between top managers, musicians, blue-collar workers, and students.

Fourth, in terms of dependent variables, 44 percent of the submitted articles attempted to predict level of cooperation. This variable was measured in a number of different ways, ranging from a simple counting of relationships (referrals, credits, repeat ventures) to scaled questions on the level of cooperation characterizing a relationship. An additional 28 percent of the submitted studies used cooperation purely as a unmeasured theoretical concept, to explain relationships between inputs, which included individuals' backgrounds, degree of formality, level of trust, and the size of a cooperative effort, and outputs, such as performance. Another 28 percent linked measures of cooperation directly to outcomes such as satisfaction and performance. Interestingly, only a few studies examined how cooperation might interact with other variables, such as environmental factors, to affect outcomes, and no study examined the impact of past performance on the willingness of parties to continue to cooperate.

Fifth, the research submitted employed a long list of very diverse theories to help explain cooperative relationships; we discuss these alternative theories in a later section of this essay. No single theory dominated, and about a third of the submitted articles lacked any theoretical foundation. Approximately another third of the studies only mentioned theory as a framework and did not use it to formulate specific hypotheses. This pattern is surprising, given the strong multidisciplinary roots of this subject.

Finally, 66 percent of the submitted research studies were field studies using either survey or archival methods. Twenty-four percent of the submissions utilized the case method, and 10 percent involved laboratory experiments.

WORK PUBLISHED IN THIS SPECIAL ISSUE

The five articles accepted for this issue cut across the domain of cooperation presented above and across the individual, group, and organizational units of analysis. In addition, there is significant diversity in methods, with case, laboratory, and field study approaches all represented.

"Affect- and Cognition-Based Trust as Foundations for Interpersonal Cooperation in Organizations," by Daniel J. McAllister, examines the predictors and consequences of interpersonal trust among managers and professionals. An important conclusion of the work is that there are different forms of trust—cognitive and affect-based—each with its own predictors and associated outcomes. By articulating a distinction between these forms of trust, this article focuses attention away from simply examining level of trust. McAllister finds that variable to be inversely and directly related to need for formal rules and monitoring, however, suggesting trust can enhance coordination by lowering administrative costs, a relationship suggested by Ouchi (1980) that had not yet been examined empirically. Another finding of the research is that affect-based trust is positively related to peer performance, providing suggestive evidence that trust produces relationships beneficial to organizations.

"Studies of Individualism-Collectivism: Effects on Cooperation in Groups," by John A Wagner III, a laboratory study focusing primarily on cooperation involving horizontal links between individuals, improves understanding of cooperation in a number of very important ways. Perhaps its most important finding is that level of cooperation can be predicted on the basis of a particular individual difference—variation on the individualism versus collectivism dimension. Given the long research tradition linking this individual difference to cultural and national differences (Hofstede, 1980), this finding suggests that theoretical models of cooperation should consider cultural differences, an idea others, including Erez and Earley (1993), have pointed out. Also, because Americans differ on individualism/collectivism (Triandis, 1989), we would expect variation in the payoffs of efforts to increase cooperation in U.S. organizations to depend on the characteristics of their employees. Specifically, such efforts should be maximally useful when targeted toward individualists but not useful among collectivists. Wagner's article also contributes by drawing from classical social psychology theory and demonstrating its relevance to the subject of cooperation.

"Building Commitment, Attachment, and Trust in Strategic Decision-Making Teams: The Role of Procedural Justice," by M. Audrey Korsgaard, David M. Schweiger, and Harry J. Sapienza, an experimental study focusing primarily on cooperation involving vertical links between individuals, makes a significant contribution by exploring some of the antecedents of cooperation more fully than has been done in the past. Specifically, it demonstrates how antecedent variables are related to one another. We indicated earlier that trust and an emotional attachment to a group are precursors of cooperation. This research reveals that these variables are in turn affected by other variables, such as employee inputs, supervisor reactions to those inputs, employees' perceptions of influence and of fairness, and their willingness to cooperate in implementing decisions. The research shows that in the creation and maintenance of trust and commitment to leaders' decisions, employees' perceptions of procedural fairness are key; leaders demonstrating procedural fairness generate trust and commitment to their decisions. In

addition, this article highlights the ubiquitous nature of cooperation. As Maier (1970) and Vroom and Yetton (1973) pointed out, decisions can only be implemented to the degree to which they are accepted and individuals are willing to cooperate in carrying them out. This study contributes to understanding of the important components and dynamics of obtaining such cooperation.

"Building Cooperation in a Competitive Industry: SEMATECH and the Semiconductor Industry," by Larry D. Browning, Janice M. Beyer, and Judy C. Shetler, examines an important case of achieving cooperation among competitors by exploring the dynamic process involved in building SEMATECH, a research, development, and testing consortium. Using a multimethod, comprehensively grounded case study, the authors identify the rich and perhaps unique steps and processes that led to the development of trust and cooperation at SEMATECH. This cooperation is described as both informal and dynamic. Emerging from an early period of disorder, conflict, and ambiguity to the development of a moral community characterized by giving, friendship, and faith, SEMATECH underwent a process described as sequential and interactive. A major finding of the study is that leaders, especially when serving as role models in developing a moral community, can play an important role in building trusting relationships. Browning and colleagues use 17 dimensions organized into three core categories to explain how cooperation was achieved and even expanded at SEMATECH. Another important contribution of the article is its interpretation of results in light of complexity theory, according to which a system of increasing complexity reaches a bifurcation point at which the old system disintegrates and a new order arises.

Like Browning, Beyer, and Shetler's work, "Does Familiarity Breed Trust? The Implications of Repeated Ties for Contractual Choice in Alliances," by Ranjay Gulati, focuses on cooperation between organizations. This article extends transaction cost explanations of joint ventures by examining the role of repeated alliances between partners. Specifically, Gulati finds that the likelihood of the use of equity sharing between partners, an arrangement that gives partners formal control over each other, decreases with an increase in the partners' experience together, as indicated by repeated alliances. The theoretical argument is that familiarity between partners breeds trust, and trust replaces legal relationships like equity sharing as a governance system. The research also demonstrates that formal equity-based alliances are more likely to occur between dissimilar and thus potentially nontrusting partners, such as those from different countries, than between more similar partners. The article's principal theoretical contribution is its combination of arguments from the social psychology literature on trust and transaction cost economics arguments regarding interfirm alliances. Combining micro and macro theories in the study of cooperative endeavors suggests a new set of variables that those interested in interorganizational relationships might fruitfully examine.

QUESTIONS ON COOPERATION AND COORDINATION

The research published here and our reflections on the process of putting together this special issue reveal a number of issues and questions pertaining to the subject of cooperation and coordination.

What Are the Antecedents of Cooperative Relationships?

According to the articles published in this issue, a number of factors predict level of cooperation. Obviously, the levels of empirical support found for these predictors differ considerably. Nonetheless, the research suggests several important variables. First, trust seems fundamental. Four of the five articles published here either set out to study trust or describe findings about the role of trust in cooperative relationships as key. The study of trust and its impact on cooperative relationships at all levels may be a particularly fruitful area of future research. The McAllister and Gulati articles provide several useful insights and guidelines for such research. In addition, Browning, Beyer, and Shetler found that trust can be built through leadership and a belief that the outcomes of trust and cooperation are worthwhile and necessary.

A number of other predictors of cooperative relationships are identified in this special issue. Murnighan (1994) discriminated between structural and psychological determinants of cooperation, and the authors represented here identify examples of each type. Psychological determinants of cooperation identified here include similarity in partners' values, the perceived status and legitimacy of partners, and the perception that interactive procedures are just. Structural determinants of cooperation identified in this issue include the number of partners in a relationship, the extent of their prior social ties as related to perceived reliability and predictability, and the social context in which cooperation occurs. Thus, a wide variety of psychological and structural variables have relevance to predicting cooperation.

The research described in the articles published in the forum suggests that additional research is needed on the conditions that give rise to naturally occurring cooperation. Most of the cooperation investigated here was in a context of formal structure and authority. Yet the factors that allow spontaneous cooperation to occur, as it does in social action groups, trade associations, and industry cartels, may be quite different. We also note that, with the exceptions of the McAllister and Korsgaard and colleagues' studies, the articles invoke trust as an explanation for their findings without actually measuring it. Thus, an obvious direction for future research is the direct empirical assessment of trust's role in these processes.

What Are the Dynamics of Cooperative Relationships?

Zajac and Olsen (1993) proposed a stage model of cooperative relationships composed of an initializing stage, a processing stage, and a reconfiguration stage with feedback loops to the earlier stages. Ring and Van de Ven

(1994) proposed a number of factors that allow cooperative relationships to evolve or dissolve over time. Treating cooperation as a dynamic process where participants constantly evaluate their decision to continue to cooperate is useful. Zajac and Olsen suggested that a dynamic perspective focuses attention on cooperative feedback mechanisms and decision points and on the issues that individuals must weigh in their analysis of any cooperative relationship. Yet there is little empirical evidence of the influence of such feedback mechanisms on cooperation or of the effect of past performance on an individual's decision to continue in a cooperative relationship. Indeed, the process may be much less cognitive, conscious, and calculated than the above discussion suggests. McAllister's inclusion of affect-based trust in his model suggests a trust process that unfolds in a more emotional and uncalculated manner. Browning and colleagues' work, however, in its description of how the U.S. semiconductor industry's market share loss to the Japanese drove cooperation at SEMATECH, highlights the conscious, more calculated sources of cooperative relationships. Clearly, more research is required on how performance both brings parties together and influences them to continue in cooperative relationships.

The temporal dynamics of cooperative relationships also warrant attention. In this issue, Gulati documents an evolution from formal cooperation to informal cooperation based on the frequency of previous relationships, and Browning, Beyer, and Shetler describe a movement from conflict and ambiguity during initial relationship formation at SEMATECH to giving, structure, process, and openness. However, additional research is needed on the dynamics of cooperation and in particular, on the factors that cause cooperative relationships to end. For example, in what proportion do partners weigh financial rewards against personal satisfaction in the decision to continue a cooperative arrangement? What institutional and environmental factors prolong or lead to the breakup of a cooperative relationship?

Bringing a systems perspective to bear on the study of cooperation might also yield important insights on cooperative dynamics. As the articles in this special research forum suggest, cooperation can be a dynamic process in which individuals react to the behaviors of others in a timely and speedy manner. Perceptions related to subsequent cooperative behaviors are likely to be shaped by a wide variety of influences, some of which might be very far removed from the immediate decision. Improving understanding of the causes and consequences of cooperation will probably require researchers to move away from simple bivariate analyses of cooperation to more sophisticated multivariate longitudinal research methods.

What Are the Outcomes of Cooperative Relationships?

Of the research published in this issue, only McAllister's article examines outcomes (in particular, performance), and it does not directly measure cooperation. Clearly, more research is needed on the outcomes of cooperation. We would suggest, too, that researchers expand the set of outcomes considered. Most of the previous research that has linked cooperation to

outcomes has focused on performance variables and individual satisfaction variables. This focus is consistent with the conceptualization of cooperation as a dynamic process: cooperation will not continue if its benefits do not equal or exceed its costs. Thus, the benefits are typically defined in terms of performance and satisfaction. However, many of the benefits of cooperation, at least to an organization, can be defined in noneconomic terms; benefits might include fast cycle time of product to market, improved quality, high-quality decision making, improved competitiveness, and so on. These dimensions can be seen as the intervening variables that help to explain why cooperation might enhance performance and satisfaction. Nonetheless, researchers would benefit from examining a broader and more proximal set of outcome variables.

In addition, most of the writing on cooperation tends to have a very positive tone, especially the work from the social and behavioral science disciplines. However, cooperation among individuals, groups, and organizations can have harmful consequences for others and for performance. For example, studies of Japanese culture have described how its excessive emphasis on cooperation has led to problems of bias, bullying, conformity, and economic collusion, to the detriment of various groups in that country. The Wagner article in this issue suggests that cooperation can lead to exhaustion and other problems associated with collectivist tendencies; Korsgaard and colleagues' article points out that procedures designed to elicit cooperation or acceptance may do the opposite if individuals perceive the procedures as a sham. Moreover, McAllister suggests that a high level of cognition-based trust may be a principal predictor of social loafing and "free riding." Some other deleterious effects of cooperation have been described: "groupthink" (Janis, 1972), coordination of pricing (Scherer & Ross, 1990), and exclusion of noncooperators from positions of power (Pfeffer & Salancik, 1978). Obviously, additional research is needed on the potential drawbacks of cooperation and the conditions under which a very high degree of cooperation is not desirable.

What Theoretical Perspectives Help Explain Cooperative Relationships?

Many theoretical frameworks can be used to describe cooperation. To provide a useful guide to future research on cooperation, we have organized the various theories in the cooperative literature into five broad categories.

Exchange theories. Theories in which cooperation is viewed as a means of maximizing economic or psychological benefits are exchange theories (Blau, 1964). Exchange theories appear in the fields of psychology, sociology, political science, and economics, and these different disciplines seem to have similar perspectives on how the exchange process is related to cooperation. The parties to a relationship become willing to cooperate when the benefits of cooperation exceed the costs. Specific theories of exchange include transaction cost theory, social psychology theories of exchange, micro and macro sociological theories of exchange, reinforcement theory, sym-

bolic interaction theory, and rational or normative decision-making theories. Theories of exchange may be most appropriately employed to explain the conscious and calculated reasons for parties' coming together to cooperate and continuing to engage in cooperative relationships.

Attraction theories. A second category of theories focuses on what attracts individuals and groups to each other and what seems to create natural affinity or its opposite (Hollinghead, 1950; Kennedy, 1944). Theories of interpersonal attraction are based on such variables as value or status similarities and differences, complementary needs, aspects of personality, goal congruence, and information needs. Obviously, attraction theories overlap with exchange theories to some degree. However, attraction theories allow the modeling of noneconomic, uncalculated costs and benefits of cooperative relationships, such as personal attraction and interpersonal fit. Such theories emphasize the noneconomic aspects of the formation of relationships. In this forum, McAllister invokes some of these theories in his discussion of affect-based trust, as do Korsgaard and colleagues, in examining some antecedents of trust.

Power and conflict theories. Emerson (1962) and Pfeffer and Salancik (1978) focused on tendencies toward conflict or its opposite, cooperation. Within this framework, diversity in individuals' and groups' goals, values, and resources, which can create perceptions of injustice or inequities, can explain conflict, and cooperation can presumably be explained by the opposite. This theory category also includes theories that focus on caste systems in organizations and nations or that highlight heterogeneity or homogeneity as sources of cooperative difficulties. Thus, power and conflict theories overlap with attraction theories. Power and conflict theories would seem especially useful in predicting the dynamics of cooperative relationships over time. For example, as the power differences between parties in a relationship increase, formal rather than informal forms of cooperation may be required. Power differences may also allow prediction of communication, conflict, and free riding.

Modeling theories. These focus on the social learning process and the importance of social learning, or imitation and modeling, in the emergence of cooperation between individuals and in organizations (Bandura, 1971; DiMaggio & Powell, 1983). Thus, many cooperative behaviors or arrangements arise because exemplar or referent individuals, groups, or organizations use them and thus legitimize them. This theory category stresses the importance of conformity, consistency, and the creation of norms of cooperative behavior through contrived group, organizational, and societal cultures. Importantly, modeling theories point to predictive factors outside of a focal cooperative relationship itself.

Social structure theories. Such theories emphasize the role of structural factors in fostering cooperation (Blau, 1974). More specifically, structural theories seek to explain the emergence of cooperative relationships in terms of aggregated conditions of the system within which cooperation occurs. Structures consist of social positions of individuals, groups, organizations,

and networks that are both differentiated and interrelated. Structural variables might include number of participants, heterogeneity and homogeneity, distance, history, and power. Like modeling theories, social structure theories look to dimensions outside a relationship to predict cooperation and coordination. Network theory, an especially popular example of social structure theory (Nohria & Eccles, 1992), explains cooperation in terms of the position of the cooperating partners in a network of relationships.

Although the above menu of theories has wide applicability, it is unlikely that any single theory can fully explain the complexities of cooperation. Thus, a multitheoretical perspective can yield important insights, as this special research forum demonstrates. For example, the joining of exchange and attraction theories helped McAllister articulate two different forms of trust. In addition, a multidisciplinary approach to the subject may also yield important insights. For example, Gulati combines ideas from economics and social psychology to explain why repeat alliances become less formally structured. Moreover, perhaps new theories are needed to capture the cooperation involved in new forms of organizing. For example, in describing cooperation at SEMATECH, Browning and colleagues borrow complexity theory from the physical sciences to help explain how an ordered system arose from apparent chaos. Continued study of cooperative relationships as they are played out within today's new organizational forms may lead scholars to search for new theories that are better able to capture these complexities.

What Research Method Is Ideal for Studying Cooperative Relationships?

McGrath (1964) described the evolution of the methods used to study a particular research topic and the knowledge that results. Researchers often begin with case analysis to identify the basic domain and issues to be considered. The second methodological phase often involves archival and field studies that explore basic and relatively simple relationships. The third phase examines specific relationships in controlled laboratory settings. Finally, research might return to the case method to fully identify various facets of a model and the relationships found in it.

Given all the prior research on cooperation that has been conducted in the multitude of disciplines, knowledge on the subject might be considered to be in its final stages. But given the new guises in which cooperative efforts are showing up within today's organizations, research might also be considered to be in its infancy. The state of knowledge on the subject will in part depend on whether past research on cooperation is relevant in today's complex organizations. There is also growing evidence that research carried out in the United States may not generalize well to other cultures (Erez & Earley, 1993). Regardless, a more definitive statement or catalog of knowledge on cooperation is necessary.

Clearly, more longitudinal case studies that are capable of capturing the complexities and dynamics of cooperation are needed. However, these case studies need to be simplified and replicated with field work and ultimately,

with simulations and laboratory studies. It would also seem important for researchers to replicate past discipline-based studies in today's business context to test generalizability. Moreover, we suggest that much of the micro-level research on cooperation can be applied to the study of cooperation between organizations, which continues to be a major topic of interest and relevance in the present organizational world.

CONCLUSION

Everywhere today, one hears of the importance of cooperation for business success. Whether raised by a chief executive giving a public speech extolling the virtues of cross-functional cooperation, or by a popular press article highlighting new ways of accomplishing work with self-managed teams, or even by business leaders lobbying Congress to allow new forms of interfirm cooperation, the subject of cooperation is very much in the news and on the minds of business leaders.

This research topic represents a real opportunity for management scholars. We are frequently exhorted to address "real" problems facing "real" managers (cf. Hambrick, 1994). In cooperation research, we have such a problem, for managers are generally not very skilled in building cooperative relationships or in creating conditions that foster cooperation among others. Thus, if the managers of today's firms are to be like the Greeks of 448 B.C., able to create organizations that are as speedy and maneuverable as the Greeks' ships were, they need to understand the causes and consequences of cooperation. Because they can juxtapose understanding of the deep roots in academic disciplines of these topics with a good understanding of current business realities, management scholars are well positioned to provide the necessary understanding and advice. Our greatest hope for this special research forum is that it will stimulate the field to take advantage of this position and to create the necessary knowledge and insight.

The articles in this special issue reflect cutting-edge theories and research on cooperation. This research contributes to an understanding of how cooperation can be fostered and continued in today's complex organizations and provides insight into the management of emerging structural forms, such as self-managed work teams, horizontal organizations, network organizations, virtual organizations, and international alliances. However, the articles do not always make that translation directly. Thus, the work reported here should be translated, applied, and commented upon by practitioners.

Although the contribution of this special group of articles is significant, much work remains to be done. Importantly, there is a need for a more systematic examination of the theoretical mechanisms that govern cooperation. Are there few or many? What is the relative importance of each? Are these mechanisms equally applicable at all levels, or do different causal processes explain cooperation at the individual, group, and organizational levels? Second, trust emerges from this set of articles as a key antecedent to cooperation, yet little exists in the management literature on this important

topic. If the interest in cooperation spurs a more careful and thoughtful examination of trust, the payoff is potentially quite high, as trust seems highly relevant to topics beyond those studied here. Third, the purported rewards of cooperation need to be established. Although business rhetoric suggests the importance of cooperation, corroborating scientific evidence is necessary. In addition, it would seem equally important to identify the conditions in which cooperation has the highest payoff. Finally, these articles suggest that insight into cooperation will require cross-level, cross-disciplinary multimethod examinations. Researchers taking a macro view and interested in cooperative relationships between firms may benefit from considering "soft" variables, such as trust and empathy. Researchers taking a micro perspective and able to articulate the psychological dynamics of cooperation will need to describe the impact of those dynamics on firm performance and how they play out when the issue is how two firms might better cooperate than compete. Both sets of scholars also need to be open to theories from other disciplines that might provide insights into this phenomenon. Such cross-disciplinary and cross-level openness may thus be an important by-product of promoting more, and more thoughtful, research on the topic of cooperation.

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AFFECT- AND COGNITION-BASED TRUST AS FOUNDATIONS FOR INTERPERSONAL COOPERATION IN ORGANIZATIONS

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This study addressed the nature and functioning of relationships of interpersonal trust among managers and professionals in organizations, the factors influencing trust's development, and the implications of trust for behavior and performance. Theoretical foundations were drawn from the sociological literature on trust and the social-psychological literature on trust in close relationships. An initial test of the proposed theoretical framework was conducted in a field setting with 194 managers and professionals.

Trust . . . tends to be somewhat like a combination of the weather and motherhood; it is widely talked about, and it is widely assumed to be good for organizations. When it comes to specifying just what it means in an organizational context, however, vagueness creeps in.

—Porter, Lawler, & Hackman, 1975: 497

Recent developments in the organizational sciences reflect the importance of interpersonal trust relationships for sustaining individual and organizational effectiveness. Researchers have recognized trust's influence on coordination and control at both institutional (Shapiro, 1987, 1990; Zucker, 1986) and interpersonal levels of organization (Granovetter, 1985; Pennings & Woiceshyn, 1987). Because economic action is embedded within networks of social relationships (Bradach & Eccles, 1989; Fichman & Levinthal, 1991; Granovetter, 1985; Larson, 1992), researchers have argued that efficiency within complex systems of coordinated action is only possible when interdependent actors work together effectively. Trust between such actors is seen as a determining factor (Pennings & Woiceshyn, 1987; Seabright, Leventhal, & Fichman, 1992).

For managers and professionals in organizations, developing and maintaining trust relationships is especially important. As boundary spanners, managers work through critical horizontal ties to external constituencies on which their departments or organizations depend (Mintzberg, 1973; Sayles,

I am grateful to Jone Pearce, Anne Tsui, and Lyman Porter for their guidance and advice in this research, conducted as part of my doctoral dissertation at the University of California, Irvine. Special words of appreciation are due to Susan Ashford and two anonymous reviewers for their insightful comments and constructive feedback on several earlier drafts of this article.

1979). Given the complexity and uncertainty inherent in managerial work and the amount of mutual accommodation it involves, effective horizontal working relationships within organizations are also critical (Gabarro, 1990; Sayles, 1979). As Thompson (1967) observed, under conditions of uncertainty and complexity, requiring mutual adjustment, sustained effective co-ordinated action is only possible where there is mutual confidence or trust.

Although trust's importance has been acknowledged, the matter of how it develops and functions has received little systematic theoretical attention. The present work develops and tests a theoretical model based on the sociological literature on trust (Barber, 1983; Lewis & Wiegert, 1985; Luhman, 1979; Shapiro, 1990; Zucker, 1986) and social-psychological work on trust in close relationships (Johnson-George & Swap, 1982; Rempel, Holmes, & Zanna, 1985). The present research was designed to contribute to understanding of the nature and functioning of interpersonal trust relationships by (1) distinguishing between two principal forms of interpersonal trust—cognition-based trust, grounded in individual beliefs about peer reliability and dependability, and affect-based trust, grounded in reciprocated interpersonal care and concern—(2) identifying factors influencing the development of each form of trust, and (3) examining the implications of each trust form for coordination-relevant behavior, including monitoring to control peers, defensive behavior, monitoring to assist peers, and interpersonal citizenship behavior.

THEORETICAL FOUNDATIONS

Interpersonal trust is a pervasive phenomenon in organizational life. Trust enables people to take risks: "where there is trust there is the feeling that others will not take advantage of me" (Porter et al., 1975: 497). Trust is based on the expectation that one will find what is expected rather than what is feared (Deutsch, 1973). Thus, competence and responsibility are central to understandings of trust (Barber, 1983; Cook & Wall, 1980; Shapiro, 1990). At times an individual's trust in others is centered more on how they make decisions that affect him or her than on how they behave: "Do they consider my interests and welfare?" Finally, trust encompasses not only people's beliefs about others, but also their willingness to use that knowledge as the basis for action (Luhmann, 1979). Combining these ideas yields a definition of interpersonal trust as the extent to which a person is confident in, and willing to act on the basis of, the words, actions, and decisions of another.

Principal Forms of Interpersonal Trust: Affect- and Cognition-Based Trust

Interpersonal trust has cognitive and affective foundations (Lewis & Wiegert, 1985). Trust is cognition-based in that "we choose whom we will trust in which respects and under what circumstances, and we base the choice on what we take to be 'good reasons,' constituting evidence of trust-

worthiness" (Lewis & Wiegert, 1985: 970). The amount of knowledge necessary for trust is somewhere between total knowledge and total ignorance (Simmel, 1964). Given total knowledge, there is no need to trust, and given total ignorance, there is no basis upon which to rationally trust. Available knowledge and "good reasons" serve as foundations for trust decisions, the platform from which people make leaps of faith, like those involved in trusting (Luhmann, 1979; Simmel, 1964).

Past measures of trust in organizational settings suggest that competence and responsibility are central elements (Butler, 1991; Cook & Wall, 1980). Reliability and dependability have also been included in measures of interpersonal trust in close relations (Johnson-George & Swap, 1982; Rempel et al., 1985). Reliability and dependability expectations must usually be met for trust relationships to exist and develop (Zucker, 1986) and evidence to the contrary provides a rational basis for withholding trust (Luhmann, 1979; Shapiro, 1987, 1990).

Affective foundations for trust also exist, consisting of the emotional bonds between individuals (Lewis & Wiegert, 1985). People make emotional investments in trust relationships, express genuine care and concern for the welfare of partners, believe in the intrinsic virtue of such relationships, and believe that these sentiments are reciprocated (Pennings & Woiceshyn, 1987; Rempel et al., 1985). Ultimately, the emotional ties linking individuals can provide the basis for trust.

Empirical evidence from the social-psychological literature on trust in close relationships supports this distinction between the two forms of trust. Johnson-George and Swap (1982) identified, distinguished between, and reliably measured two dimensions of trust they labeled "reliability" and "emotional trust." Similarly, Rempel and colleagues (1985) distinguished between "dependability" and "faith" (emotional security) as unique forms of trust. Organizations abound with relationships based on dependability and faith (Pennings & Woiceshyn, 1987) in which moderate expressions of interpersonal care and concern are not uncommon (Granovetter, 1985; Griesinger, 1990; Pennings & Woiceshyn, 1987). Drawing on this theoretical distinction between forms of interpersonal trust, I hypothesized that

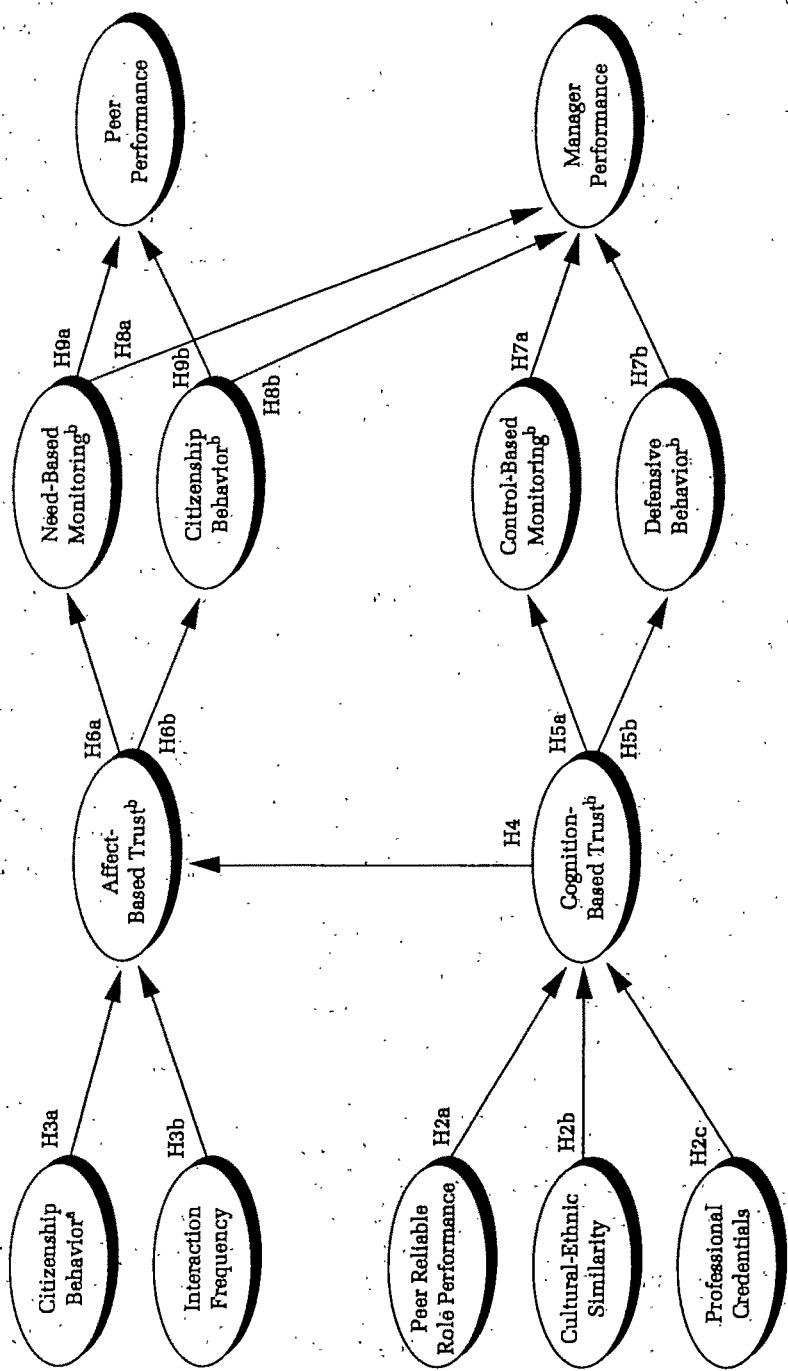
Hypothesis 1: Relationships of interpersonal trust among managers in organizations are characterized by two dimensions—cognition-based trust and affect-based trust.

Figure 1 outlines the theoretical framework developed in the following discussion. The sequence of relationships is from peer attributes and behavior, through focal manager assessments of peer trustworthiness, to focal manager behavioral responses, and ultimately to focal manager and peer performance alike.

Factors Influencing Managerial Trust Relationships

Antecedents of cognition-based trust. In organizations, the extent to which a manager will be willing to vest cognition-based trust in peers may

FIGURE 1
Theoretical Model Outlining the Role of Trust in Interpersonal Relationships in Organizations



^a Direction of relationship is from peer to manager.
^b Direction of relationship is from manager to peer.

depend on the success of past interaction, the extent of social similarity, and organizational context considerations (Zucker, 1986). First, because working relationships are typically personal and extend over time, it is possible for people to consider the track record of peers, or how they have carried out role-related duties in the past, when assessing trustworthiness (Cook & Wall, 1980; Granovetter, 1985). Evidence that a peer's behavior is consistent with norms of reciprocity and fairness and that the peer follows through on commitments is vital (Lindskold, 1978; Stack, 1988). In working relationships involving high interdependence, peer performance can have a determining impact on personal productivity, and evidence that peers carry out role responsibilities reliably will enhance a manager's assessments of a peer's trustworthiness. Accordingly,

Hypothesis 2a: The level of a manager's cognition-based trust in a peer will be positively associated with the extent of that peer's reliable role performance.

Second, social similarity between individuals can influence trust development. Groups of individuals with similar fundamental characteristics, such as ethnic background, may have an advantage over diverse groups in their ability to create and maintain trusting working relationships. Light (1984) documented the tendency of ethnic minority entrepreneurs to conduct business through co-ethnic rather than interethnic social circles. More fundamentally, self-categorization theorists have observed that individuals tend to group themselves with others on the basis of objective attributes such as race, age, and gender (Turner, 1987) and that such internal classifications influence beliefs and attitudes. Individuals are more likely to perceive out-group members as dishonest, untrustworthy, and uncooperative than they are to so perceive in-group members (Brewer, 1979). Notwithstanding the potential beliefs of diversity for organizations, which include enhanced creativity, access to a broader set of environmental resources, and more, the possibility that cultural similarity facilitates the creation and maintenance of trust in organizations merits recognition. Accordingly,

Hypothesis 2b: The level of a manager's cognition-based trust in a peer will be greater when the two are culturally or ethnically similar.

Third, formal organizations, through formal role specifications, specify boundaries for trust relationships (Baier, 1985; Fox, 1974) and professional credentials serve as clear signals of role preparedness. Educational institutions, professional associations, and credentialing agencies manufacture trust by providing guarantees to would-be trustees through certification that individuals meet standards for acceptability in a larger professional community (Zucker, 1986). Professional standing can be maintained over time through continued membership and participation in relevant professional associations. Thus,

Hypothesis 2c: The level of a manager's cognition-based trust in a peer will be greater for peers with higher professional credentials.

Antecedents of affect-based trust. Although external factors making the behavior of relationship partners predictable provide foundations for cognition-based trust, insights into the motives of relationship partners provide foundations for affect-based trust. Findings from attribution research indicate that behavior recognized as personally chosen rather than role-prescribed, serving to meet legitimate needs, and demonstrating interpersonal care and concern rather than enlightened self-interest may be critical for the development of affect-based trust (Clark & Mills, 1979; Clark, Mills, & Powell, 1986; Clark & Waddell, 1985; Holmes, 1978; Holmes & Rempel, 1989; Kelly, 1979; Rempel et al., 1985).

Such behavior corresponds well with descriptions of organizational citizenship behavior (OCB; Organ, 1988; Smith, Organ, & Near, 1983). Organ defined OCB as behavior intended to provide help and assistance that is outside an individual's work role, not directly rewarded, and conducive to effective organizational functioning. Smith, Organ, and Near defined altruism, a specific form of OCB, as behavior "directly and intentionally aimed at helping a specific person in face-to-face situations" (1983: 657). Altruistic behavior may provide an attributional basis for affect-based trust. Being extra-role, it can be viewed as being personally chosen, and not being directly rewarded, it cannot easily be attributed to enlightened self-interest (MacKenzie, Podsakoff, & Fetter, 1991). Accordingly,

Hypothesis 3a: The level of a manager's affect-based trust in a peer will be positively associated with the level of that peer's citizenship behavior directed toward the manager.

Because affect-based trust is grounded in an individual's attributions concerning the motives for others' behavior, it should be limited to contexts of frequent interaction, where there are sufficient social data to allow the making of confident attributions (Lewis & Wiegert, 1985). Thus,

Hypothesis 3b: The level of a manager's affect-based trust in a peer will be positively associated with the frequency of interaction between the manager and the peer.

The relationship between cognition- and affect-based trust. Although much of the research on affectivity in organizations and on the relationship between affect and cognition has focused on unanchored mood states (Brief & George, 1992; Burke, Brief, George, Roberson, & Webster, 1989), increasing attention is being given to the interpersonal foundations of affectivity (Isen & Baron, 1991; Longenecker, Jaccoud, Sims, & Gioia, 1992; Park, Sims, & Motowidlo, 1986; Tsui & Barry, 1986). Research on affect and cognition in close relationships has highlighted the development of interpersonal affect

upon a cognitive base (Holmes & Rempel, 1989; Rempel et al., 1985). Cognition-based trust, or reliability, is seen as "more superficial and less special" than emotional trustworthiness (Johnson-George & Swap, 1982: 1316). Faith (Rempel et al., 1985: 98) is characterized by a greater investment of time and emotion than are dependability and reliability.

For working relationships among managers, some level of cognition-based trust may be necessary for affect-based trust to develop; people's baseline expectations for peer reliability and dependability must be met before they will invest further in relationships. Where baseline expectations are not yet established, individuals may be inclined to attribute extra-role conduct to ingratiation and impression management rather than to care and concern. Once an individual has established a track record for reliability and dependability, and thus some level of cognition-based trust exists, confident attributions concerning the motivations for that person's citizenship behavior may follow. Accordingly,

Hypothesis 4: A manager expressing high levels of cognition-based trust in a peer will also report high affect-based trust in that peer.

Two comments qualify this developmental perspective on the relationship between affect- and cognition-based trust. First, given the distinctive antecedents and consequences posited, affect-based trust should be viewed as a distinct form of interpersonal trust rather than as a higher level of trust. Second, as affect-based trust matures, the potential for the decoupling of trust forms and for reverse causation (affect-based trust influencing cognition-based trust) increases. Zajonc observed that "once formed, an evaluation is not easily revoked. . . . Affect often persists after a complete invalidation of its original cognitive basis" (1980: 157). Holmes and Rempel (1989) observed that as affect-based trust develops, key attributions, such as "This colleague genuinely cares about me," become incorporated into a stable and global picture of a partner's motives. In time, ascribed motives are taken as permanent and left unquestioned, even in the face of disconfirming evidence. Transgressions are discounted in advance or explained away. Thus, once a high level of affect-based trust has developed, a foundation of cognition-based trust may no longer be needed.

Consequences of Managerial Beliefs About Peer Trustworthiness

Control-based monitoring and defensive behavior. Where one person, interdependent with another, cannot count on that individual to be dependable and reliable, he or she can take steps to manage the uncertainty inherent in the situation. Monitoring to control the untrustworthy individual is one likely response (Bradach & Eccles, 1989; Pennings & Woiceshyn, 1987; Williamson, 1974). As Ouchi observed, "People must either be able to trust each other or to closely monitor each other if they are to engage in cooperative enterprises" (1979: 846).

Besides assuring some minimal level of peer performance, managers

must perform their own duties with little disturbance, buffer themselves from the influence of others, and protect their personal interests (Ashforth & Lee, 1990). Individuals behave defensively, for example, when they make requests for assistance well ahead of the time they are needed, draw upon multiple and redundant sources when making requests for the assistance, expend extra resources working around and avoiding others, and use official and formal (rather than informal) means to document requests (Ashforth & Lee, 1990). Two hypotheses follow:

Hypothesis 5a: A manager expressing a high level of cognition-based trust in a peer will engage in little control-based monitoring of that peer.

Hypothesis 5b: A manager expressing a high level of cognition-based trust in a peer will direct little defensive behavior toward that peer.

Within this theoretical framework, control-based monitoring and defensive behavior are behavioral consequences of cognition-based trust alone. In practical terms, for affect-based trust to develop, some level of cognition-based trust must already exist, and it can be expected that where cognition-based trust is present, levels of monitoring and defensive behavior will be low. Likely consequences of affect-based trust are outlined below.

Need-based monitoring and interpersonal citizenship behavior. Relationships characterized by affect-based trust resemble so-called communal relationships (Clark, Mills, & Corcoran, 1989; Clark, Mills, & Powell, 1986). Research findings show that individuals in communal relationships are more inclined to keep track of associates' needs than are individuals in exchange relationships. What drives need-based monitoring is not the desire to generate future obligations or to reciprocate benefits received, but rather an understanding of the communal nature of the relationship: "In a communal relationship, the idea that a benefit is given in response to a benefit that was received is compromising, because it calls into question the assumption that each member responds to the needs of the other" (Clark & Mills, 1979: 13). In communal relationships, partners appear less inclined to keep track of personal inputs on joint tasks (Clark, 1984) and to feel exploited by unrequited helping (Clark & Waddell, 1985). They take on their partners' problems as their own, develop a tacit awareness of partners' needs, and learn how to respond appropriately (Holmes & Rempel, 1989). Similarly, in affect-based-trust relationships, sensitivity to the personal and work-related needs of associates should be high. Accordingly,

Hypothesis 6a: A manager expressing a high level of affect-based trust in a peer will engage in a great amount of need-based monitoring of that peer.

Individuals expressing high affect-based trust in peers may also direct a great amount of interpersonal citizenship behavior toward them. Increased assistance may follow naturally either from an increased awareness of peer

needs (the product of need-based monitoring) or from a desire to assist peers in meeting their personal objectives and to express felt care and concern tangibly. Although Organ and Konovsky asserted that "characteristic OCB has a deliberate, controlled character, somewhat akin to conscious decision making rather than expressive emotional behavior" (1989: 162), I argue that when a great amount of citizenship behavior is directed toward a focal individual, the behavior has expressive, noncalculated qualities. Accordingly,

Hypothesis 6b: A manager expressing a high level of affect-based trust in a peer will direct a great amount of interpersonal citizenship behavior toward that peer.

It is important to note that no direct relationship between a peer's interpersonal citizenship behavior and a manager's citizenship behavior is posited. Observation of a direct relationship would demonstrate the influence of reciprocity and exchange norms (Holmes, 1978; Holmes & Rempel, 1989). Within the proposed framework, peer conduct (citizenship directed toward a focal manager) influences the focal manager's affect-based-trust perceptions through its expressive qualities. Those perceptions in turn influence the manager's citizenship behavior toward the peer. The latter's citizenship behavior becomes an expressive act rather than an obligation-discharging and equilibrium-restoring act of reciprocation.

Performance Implications of Cognition- and Affect-Based Trust

Apart from a general assumption of the efficacy of trust relations as a lubricant to the social system, facilitating coordinated action (Arrow, 1974; Ouchi, 1979; Williamson, 1974), existing research contains little on how trust affects performance outcomes. The behavioral consequences of trust may provide one line of explanation. Managerial and professional work involves mutual adjustment and accommodation within a multiple constituency context (Sayles, 1979; Tsui, 1984). Trusting peers should receive enhanced performance assessments to the extent that the behavioral consequences of trust further organizational ends. If trust helps to further organizational ends, it should be associated with supervisor assessments of the performance of trusting and trusted individuals.

Performance implications of defensive behavior and control-based monitoring. In general, monitoring and defensive behavior represent non-productive uses of finite managerial resources. Allocating work energies to pursuits like monitoring (Alchian & Demset, 1972; Baker, Jensen, & Murphy, 1988) and defensive behavior (Ashforth & Lee, 1990; Kahn, Wolfe, Quinn, & Snoek, 1964) involves a trade-off: Managers engaging in excessive monitoring and defensive behavior will have fewer resources remaining with which to accomplish fundamental work objectives. Accordingly,

Hypothesis 7a: The level of a manager's control-based monitoring of peer will be negatively associated with supervisor assessments of the manager's performance.

Hypothesis 7b: The level of a manager's defensive behav-

ior toward a peer will be negatively associated with supervisor assessments of the manager's performance.

Performance implications of need-based monitoring and citizenship behavior. Organizations depend on the discretionary contributions of their members to maintain efficiency and coordination; one has only to witness the disruption that occurs when employees limit their contributions exclusively to what is specified in their job descriptions to realize that this is the case (Katz, 1964). Organizations must also depend on employees to use their skills and energies wisely so that contributions are maximized—organizations need employees who work not only harder but smarter. An essential ingredient in working smarter is undoubtedly paying attention and looking for opportunities to make constructive contributions.

Thus, need-based monitoring and citizenship behavior by focal managers may enhance assessments of their contributions, especially assessments provided by supervisors and others whose interests are aligned with those of the organization. Two hypotheses follow:

Hypothesis 8a: The level of a manager's need-based monitoring of a peer will be positively associated with supervisor assessments of the manager's performance.

Hypothesis 8b: The level of a manager's interpersonal citizenship behavior directed toward a peer will be positively associated with supervisor assessments of the manager's performance.

Performance enhancement is likely to be a principal motivator for need-based monitoring. Need-based monitoring arises when individuals feel responsible for the needs of others and wish to respond to those needs (Clark et al., 1989). Pearce and Gregerson argued that "felt responsibility is a psychological state that may play an important role in numerous aspects of job performance and deserves further research attention" (1991: 843). Indeed, need-based monitoring and assistance behavior that addresses work-related needs should enhance peer performance. Two hypotheses complete the theoretical framework:

Hypothesis 9a: The level of a manager's need-based monitoring of a peer will be positively associated with supervisor assessments of the peer's performance.

Hypothesis 9b: The level of a manager's interpersonal citizenship behavior directed toward a peer will be positively associated with supervisor assessments of the peer's performance.

METHODS

Respondents

A sample of 194 managers and professionals, including men and women from various industries, reported on cross-functional dyadic relationships

with peers at work. Individuals enrolled in, and alumni of, the executive master's of business administration (EMBA) program of a major university in southern California were requested to participate and to nominate peers from work to participate with them. In examining relations among middle- and upper-level managers, I focused on relations of lateral interdependence (Sayles, 1979), where the impact of trust's presence or absence was expected to be pronounced (Thompson, 1967).

Each EMBA affiliate agreeing to participate nominated two peers, so triads were formed. Triad members separately completed surveys describing various aspects of their working relationships with one another. Respondents provided two forms of data: (1) information concerning one triad member from the perspective of a focal manager, and (2) information concerning the second triad member from the perspective of a peer. Data collected from respondents were combined to form manager-peer dyad records. Of the 197 individuals initially contacted, 80 agreed to participate, a 41 percent acceptance rate. Given the level of commitment involved (questionnaire response, as well as nominating peers), this response rate is well within accepted limits. The nominated peers were not associated with the EMBA program, and the response rate at the second stage of the study was 81 percent (194 of 240 EMBA students, alumni, and nominated peers). From the data collected, I constructed 175 complete manager-peer dyad records, which formed the basis for the present research. The initial contacts also identified one person, in most cases a superior, familiar with the performance of all triad members to provide performance information; the superior's response rate was 86 percent.

The respondents were, for the better part, mature (an average age of 38 years), well-educated (57 percent with some graduate training, 28 percent with undergraduate degrees) individuals with considerable organizational experience (an average professional tenure of 11.7 years). The profile of respondents by age and gender corresponds well with that of the population of EMBA students and alumni (average age 37 years, 74.8 percent men). Although further information on the population from which respondents were drawn was not available, it appeared likely that they were representative of the population.

Procedures

Initial contacts agreeing to participate in this study were directed to think of peers (not supervisors or subordinates), from functional areas different from their own, with whom they had significant work-related interaction. After a contact identified three to five people with whom he or she "worked the best" and three to five with whom he or she "worked less well," the individual selected one person from each list to participate in the study with him or her. The working relationships examined were task-oriented, not limited to close friendships, and varied along the critical dimensions of trust. By stipulating that the people chosen should interact with one another at work, I ensured the existence of three separate dyads in each organiza-

tion.¹ I used a randomization procedure to assign individuals to focal manager-peer dyads and to allocate reporting roles within dyads. The statistical independence of observations was maintained by having no respondents provide information from the perspective of one role (focal manager or peer) for more than one dyad.²

Measures

Except for the performance data provided by superiors, dyad members provided all data for this study. Given the dyad-specific nature of the information involved, I considered these sources most authoritative. Focal managers reported on peer trustworthiness and behavioral responses to peers (control-based monitoring, defensive behavior, need-based monitoring, and citizenship behavior). Peers provided exogenous data (interaction frequency, citizenship behavior, reliable role performance, educational attainment, and ethnic background).

Affect- and cognition-based trust. A new measure to assess affect- and cognition-based trust levels was developed for use in this study. The measure consists of 11 items, 6 assessing levels of cognition-based trust, and 5 assessing affect-based trust; respondents indicated, on a scale ranging from 1 (strongly disagree) to 7 (strongly agree), their agreement with various statements about a specific peer at work.

Drawing on a review of the literature and on available measures of interpersonal trust (Cook & Wall, 1980; Johnson-George & Swap, 1982; Rempel et al., 1985; Rotter, 1971), I created an initial pool of 48 items. Eleven organizational behavior scholars, provided with definitions of affect- and cognition-based trust, classified these items as tapping cognition-based trust, affect-based trust, both forms of trust, or neither form of trust. Based on an analysis of expert evaluations, I created a subset of 20 unambiguous items,

¹ The procedure used here is similar to that used by Tsui (1984). Manipulation checks revealed that it was effective in controlling self-selection tendencies and building variation along the critical trust dimensions. Nominating individuals expressed greater affect- and cognition-based trust in peers selected from the people with whom they worked best than in those with whom they worked less well (pairwise t-tests, $p < .001$). Also, nominated peers from the first list expressed greater affect- and cognition-based trust in the nominating individuals than did peers from the second list (pairwise t-tests, $p < .05$).

² By random assignment, triad members were assigned roles as respondents (1, 2, or 3). The three focal manager → peer dyads addressed were as follows: 1 → 2, 2 → 3, and 3 → 1. Thus, respondent 1 provided information from the perspective of a focal manager for his or her relationship with respondent 2 and information from the perspective of a peer for his or her relationship with respondent 3. Although I collected complete data for all relationships within each triad, dyad-specific data collected for use in hypothesis testing were collected first. By collecting respondent 1's assessment of his or her trust in respondent 2 before collecting information on his or her trust in respondent 3, the relevant assessment received was absolute rather than comparative. This method allowed efficient use of respondents (data concerning three dyads were collected from each set of three respondents) and maintained independence of observations. Further, parallel data collected but not used in hypothesis testing could be used for preliminary analyses of new measures developed in the study.

10 items for each form of trust. I used results of an exploratory factor analysis of pretest data from a group of employed M.B.A. and undergraduate business students to further reduce the measure to the 11 strongest-loading items. Table 1 gives the wording and confirmatory analysis results for this trust measure and for the behavioral response measures, which are discussed in the next section. Reliability estimates (Cronbach's alphas) for the cognition- and affect-based trust measures are .91 and .89, respectively.

Behavioral response measures. The questionnaire contained 25 items designed to measure behavioral responses associated with trusting or dis-trusting peers. Respondents reported the extent to which they agreed that certain actions described their behavior toward a specific peer on a seven-point scale (1, strongly disagree, to 7, strongly agree). Fourteen items measuring control-based monitoring, defensive behavior, and need-based monitoring were original to the present study, developed from a review of the literature and pretested on the group described above. Eleven items assessed citizenship behavior, 6 of which were drawn from Williams and Anderson's (1991) measure and rephrased to address assistance to specific individuals rather than organization members in general and 5 of which were developed to more fully tap the domain of the construct.

Initial exploratory factor analyses were conducted on parallel data that were collected but not used to test hypotheses in the present research (see footnote 1). I extracted four factors with acceptable psychometric properties (eigenvalue greater than 1.0, $\alpha > .60$) and retained them for confirmatory analysis with the present respondents: control-based monitoring and defensive behavior items together (factor 1), citizenship behavior with strong affiliative content (factor 2), citizenship behavior involving congenial assistance (factor 3), and need-based monitoring (factor 4).

To assess the adequacy of the derived trust and behavioral response measures for use with the present research sample and to test the discriminant validity of trust and behavioral response measures, I conducted a confirmatory factor analysis using LISREL 7 (Jöreskog and Sörbom, 1989). I computed the comparative fit index (CFI), a fit measure that prevents the underestimation of fit likely to occur in small samples, to assess the fit of the factor structure to the data (Bentler, 1990) and examined correlations among factors to assess the discriminant validity of measures. Table 1 reports results.

Overall, the model fit the data well ($CFI = .90$). All factor loadings (lambdas) on specified factors were significant ($t > 1.96$). Reliability estimates (α) for affiliative citizenship behavior, assistance-oriented citizenship behavior, need-based monitoring, and monitoring and defensive behavior measures were .79, .85, .69, and .87, respectively. However, several correlations among latent constructs were considerable, with off-diagonal elements in the phi-matrix exceeding .60.

Because I obtained trust and behavioral response measures from a single source, it was important to demonstrate substantive differences between these measures. Within the LISREL framework, discriminant validity can be

TABLE 1
Results of Confirmatory Factor Analysis for Behavioral Response and Interpersonal Trust Measures^a

Items	Lambdas
Affect-based trust	
We have a sharing relationship. We can both freely share our ideas, feelings, and hopes.	.89
I can talk freely to this individual about difficulties I am having at work and know that (s)he will want to listen.	.82
We would both feel a sense of loss if one of us was transferred and we could no longer work together.	.81
If I shared my problems with this person, I know (s)he would respond constructively and caringly.	.79
I would have to say that we have both made considerable emotional investments in our working relationship.	.66
Cognition-based trust	
This person approaches his/her job with professionalism and dedication.	.90
Given this person's track record, I see no reason to doubt his/her competence and preparation for the job.	.86
I can rely on this person not to make my job more difficult by careless work.	.81
Most people, even those who aren't close friends of this individual, trust and respect him/her as a coworker.	.77
Other work associates of mine who must interact with this individual consider him/her to be trustworthy.	.73
If people knew more about this individual and his/her background, they would be more concerned and monitor his/her performance more closely. ^b	.69
Need-based monitoring	
Even when others think everything is fine, I know when (s)he is having difficulties.	.76
This person doesn't have to tell me in order for me to know how things are going for him/her at work.	.72
Affiliative citizenship behavior	
I take time to listen to this person's problems and worries.	.79
I have taken a personal interest in this individual.	.78
I frequently do extra things I know I won't be rewarded for, but which make my cooperative efforts with this person more productive.	.72
I pass on new information that might be useful to this person.	.65
I willingly help this individual, even at some cost to personal productivity.	.62
When making decisions at work that affect this individual, I try to take his/her needs and feelings into account.	.40
I try not to make things more difficult for this person by my careless actions.	.17
Assistance-oriented citizenship behavior	
I help this person with difficult assignments, even when assistance is not directly requested.	.90
I assist this person with heavy work loads, even though it is not part of my job.	.84
I help this person when (s)he has been absent.	.71
Monitoring and defensive behavior	
I find that this person is not the sort of coworker I need to monitor closely. ^b	.85
The quality of the work I receive from this individual is only maintained by my diligent monitoring.	.81
I have sometimes found it necessary to work around this individual in order to get things done the way that I would like them to be done.	.73
I keep close track of my interactions with this individual, taking note of instances where (s)he does not keep up her/his end of the bargain.	.72
I have found it necessary to make inquiries before responding to this person's requests for assistance. This ensures that my interests are protected.	.62
Rather than just depending on this individual to come through when I need assistance, I try to have a backup plan ready.	.56

^a The lambdas are reported from the completely standardized solution. Chi-square with 362 degrees of freedom is 681.64 ($p < .001$). Comparative fit index is .90. Calculated from null of 3,648.90 with 406 degrees of freedom.

^b Item was reverse-coded.

assessed in part by constraining a single phi coefficient (ϕ_{ij}) to 1.0, refitting the model, and testing the resulting change in the chi-square measure of model fit (Anderson & Gerbing, 1988; Bagozzi & Yi, 1988). I conducted this analysis for each of four correlations exceeding .60. With one exception, constraining ϕ_{ij} to 1.0 resulted in a significant worsening in model fit, indicating a real difference in the measures. The relationship between cognition-based trust and monitoring and defensive behavior measures was found to be $-.85$, and the constrained-coefficient model did not yield a change in model fit ($\Delta\chi^2 = .71$, $df = 1$, n.s.). Because monitoring and defensive behavior could not be empirically distinguished from negative cognition-based trust, I decided to retain the cognition-based trust measure and exclude the monitoring and defensive behavior measure from further use in this study.

Exogenous variables. Reliable role performance was measured with four items drawn from Williams and Anderson's (1991) measure of organization-directed citizenship behavior and in-role behavior. Respondents assessed, on a seven-point scale ranging from 1, "almost never," to 7, "almost always," the extent to which each behavior described was characteristic of their behavior on the job. Frequency of interaction was measured with four items adapted from an instrument developed by Wilson (1988). Respondents described the frequency of various forms of their work-related interaction with a focal manager on a seven-point scale ranging from 1 (once or twice in the last six months) to 7 (many times daily). Citizenship behavior, affiliative and assistance-based, was measured with items identical to those used for focal manager citizenship behavior.

Table 2 reports confirmatory factor analysis results for the exogenous scales and item wordings. The four-factor solution provides an adequate fit for the data ($CFI = .90$, $t > 1.96$, all loadings). Reliability estimates for interaction frequency, peer affiliative citizenship behavior, peer assistance-oriented citizenship behavior, and peer reliable role performance are $.91$, $.81$, $.82$, $.77$, respectively.

Demographic data, including education level, age, gender, and ethnicity, were collected to develop a basic demographic profile of the respondents. Further, I used these data to derive measures of cultural-ethnic and gender similarity, and professional status. A binary variable for cultural-ethnic similarity was created, with focal manager-peer dyads whose members reported similar ethnic backgrounds (e.g., white-white, Hispanic-Hispanic) coded 1 and those whose members reported different ethnic backgrounds coded 0. I created a similar binary measure for similarity in gender and one for the assessment of professional standing (attended a university at the master's or doctoral level = 1, at most an undergraduate degree = 0). This breakdown was appropriate because only 16 percent of the respondents did not already possess some sort of four-year university degree.

Performance. Tsui's three-item measure of reputational effectiveness (Tsui, 1984) and one additional item were used to measure focal manager and peer performance. Supervisors were asked to consider the total job, including job-specified duties, additional activities not formally required,

TABLE 2
Results of Confirmatory Factor Analysis for Exogenous Measures^a

Items	Lambdas
Interaction frequency	
How frequently does this individual initiate work-related interaction with you?	.95
How frequently do you initiate work-related interaction with this person?	.94
How frequently do you interact with this person at work?	.90
How frequently do you interact with this person informally or socially at work?	.66
Peer affiliative citizenship behavior	
I take time to listen to this person's problems and worries.	.82
I willingly help this individual, even at some cost to personal productivity.	.70
I have taken a personal interest in this individual.	.69
I pass on new information that might be useful to this person.	.65
I frequently do extra things I know I won't be rewarded for, but which make my cooperative efforts with this person more productive.	.61
When making decisions at work that affect this individual, I try to take his/her needs and feelings into account.	.54
I try not to make things more difficult for this person by my careless actions.	.34
Peer assistance-oriented citizenship behavior	
I help this person when (s)he has been absent.	.82
I help this person with difficult assignments, even when assistance is not directly requested.	.78
I assist this person with heavy work loads, even though it is not part of my job.	.74
Peer reliable role performance	
This person adequately completes assigned duties.	.76
This person performs all tasks that are expected of him/her.	.71
This person fulfills responsibilities specified in job description.	.64
This person meets formal performance requirements of the job.	.60

^a The lambdas are reported from the completely standardized solution. Chi-square with 129 degrees of freedom is 256.01 ($p < .001$). Comparative fit index is .90. Calculated from null of 1,688.53 with 153 degrees of freedom.

and the dependability of focal managers and peers, and to assess their satisfaction with various aspects of each target individual's job performance on a seven-point scale ranging from 1 (not at all) to 7 (entirely). Performance measures were found to be reliable ($\alpha = .92$). Table 3 reports confirmatory factor analysis results and item wordings.

Analyses

Using LISREL 7 (Anderson & Gerbing, 1988; Jöreskog & Sörbom, 1989), I took a two-stage approach to structural equation model fitting and assessment, assessing measurement properties of the model prior to considering structural relationships between constructs. Within the structural equation modeling framework used, multiple observed indicators (the individual scale items) were used to measure latent constructs. In testing the theoretical

TABLE 3
Results of Confirmatory Factor Analysis for Performance Measures^a

Items	Lambdas
Assessor rating of focal manager's performance	
Overall, to what extent do you feel that this person is performing his/her total job the way you would like it to be performed?	.96
To what extent has this person met all of your expectations in his/her roles and responsibilities?	.93
To what extent are you satisfied with the total contribution made by this person?	.82
If you had your way, to what extent would you change the manner in which this person is doing his/her job?	.71
Assessor rating of peer performance	
Overall, to what extent do you feel that this person is performing his/her total job the way you would like it to be performed?	.95
To what extent has this person met all of your expectations in his/her roles and responsibilities?	.94
To what extent are you satisfied with the total contribution made by this person?	.82
If you had your way, to what extent would you change the manner in which this person is doing his/her job?	.72

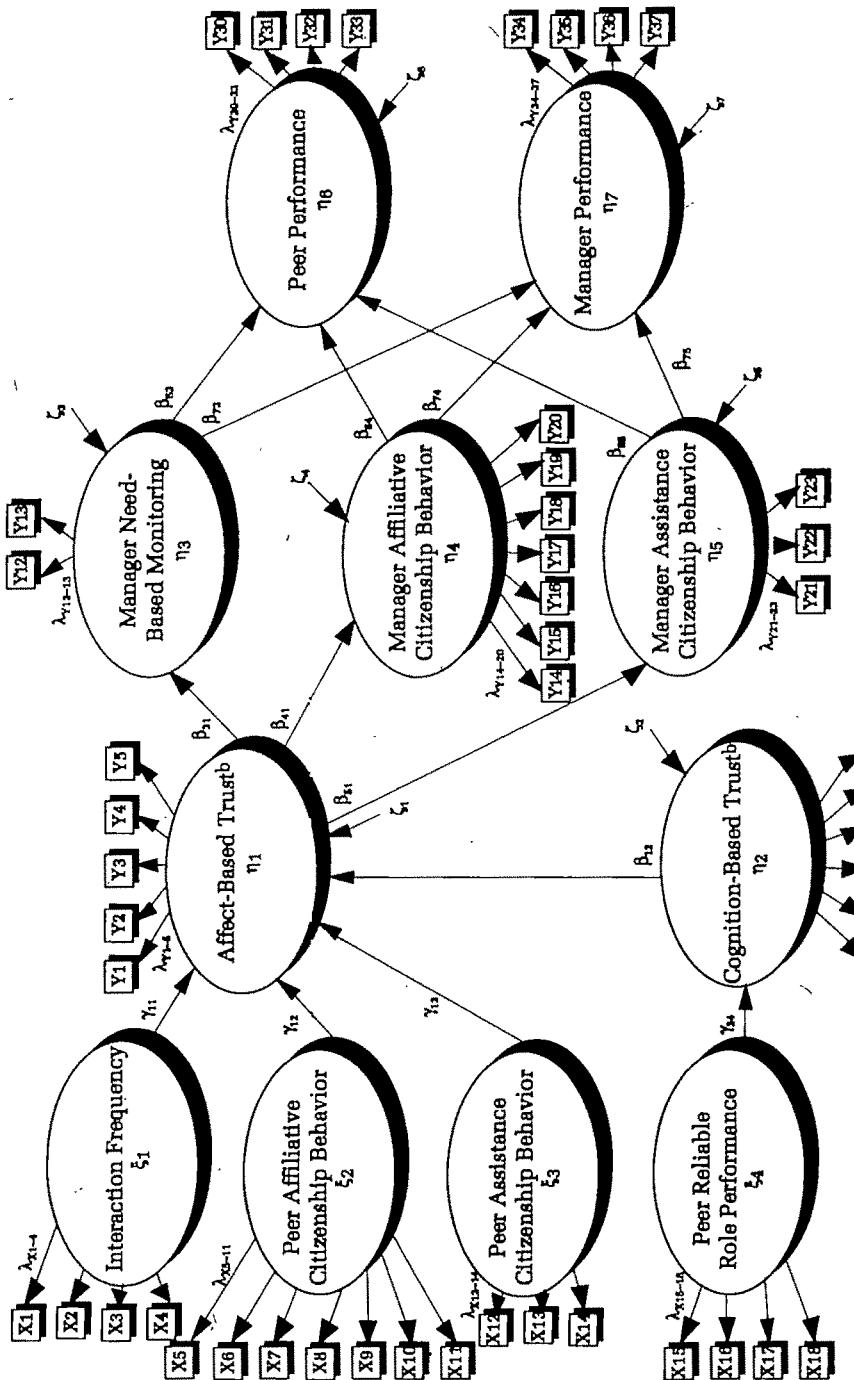
^a The lambdas are reported from the completely standardized solution. Chi-square with 19 degrees of freedom is 99.57 ($p < .001$). Comparative fit index is .93. Calculated from null of 1,245.73 with 28 degrees of freedom.

framework, I fitted 11 nested models, each incorporating different assumptions about model parameters, to the data.

The first two models were used to assess measurement properties. An initial null model specifying no relations among observable variables represented the poorest-fitting model and provided a baseline for computation of the normed comparative fit index. A measurement model with the paths between observable variables and associated latent constructs freed and latent constructs allowed to correlate freely was fitted to the data. As during measure development, I assessed the discriminant validity of constructs by constraining correlations among constructs to zero and examining the change in chi-square.

To test hypotheses concerning the structural relationships among variables, I took a nested-models approach (Anderson & Gerbing, 1988). I arrayed nine nested structural models between the measurement model—the best-fitting model, with structural relationships among latent constructs assumed to be perfectly estimated—and the null model and compared them using chi-square difference tests. First, the theoretical model, with all paths not specifically hypothesized to exist fixed to zero, was specified. Figure 2 presents the structural relationships in this model from which four variables—defensive behavior, control-based monitoring, social similarity, and professional status—are omitted. The combined measure of monitoring and defensive behavior was found to be insufficiently distinct from cognition-

FIGURE 2
Structural Parameters Included in the Theoretical Model^a



^a Error variances for observed variables (δ and ϵ elements) and correlations among latent exogenous variables (Φ_1 elements) have been omitted for the sake of clarity.

^b Direction of relationship is from manager to peer.

based trust to warrant inclusion, and the categorical measures of social similarity (gender and ethnic background) and professional status were not suitable for inclusion within the LISREL model.³

In addition, three constrained-parameter and five relaxed-parameter models were fitted to the data. For the constrained models, I fixed the sets of relationships hypothesized to exist to zero and assessed chi-square difference tests between these models and the theoretical model. These tests indicated whether these models included paths that should have been omitted. The three constrained-parameter models can be specified as follows: in model C1, paths from exogenous variables to affect- and cognition-based trust are fixed to zero ($\gamma_{11} = \gamma_{12} = \gamma_{13} = \gamma_{24} = 0$); in model C2, paths from cognition- and affect-based trust to behavioral response measures are fixed to zero ($\beta_{31} = \beta_{41} = \beta_{51} = 0$); and in model C3, paths from behavioral response to performance measures are fixed to zero ($\beta_{63} = \beta_{64} = \beta_{65} = \beta_{73} = \beta_{74} = \beta_{75} = 0$). Examining the impact of sets of constrained paths in addition to examining the significance of individual paths is important where the constructs involved are significantly correlated (Niehoff & Moorman, 1993). A significant difference in fit between structural models would provide support for fundamental relationships hypothesized in the model.

For the relaxed-parameter models, I freed sets of structural paths fixed to zero in the theoretical model and conducted chi-square difference tests. These tests indicate the potential importance of relationships not yet specified. The five relaxed-parameter models examined can be specified as follows: in model R1, additional paths from exogenous variables to affect- and cognition-based trust are freed ($\gamma_{21}, \gamma_{22}, \gamma_{23}, \gamma_{14}$); in model R2, additional paths from cognition- and affect-based trust to behavioral response variables are freed ($\beta_{32}, \beta_{42}, \beta_{52}$); in model R3, paths from exogenous variables to behavioral response variables are freed ($\gamma_{31}, \gamma_{32}, \gamma_{33}, \gamma_{34}, \gamma_{41}, \gamma_{42}, \gamma_{43}, \gamma_{44}, \gamma_{51}, \gamma_{52}, \gamma_{53}, \gamma_{54}$); in model R4, paths from trust to performance are freed ($\beta_{61}, \beta_{62}, \beta_{71}, \beta_{72}$); and in model R5, paths from exogenous variables to performance are freed ($\gamma_{61}, \gamma_{62}, \gamma_{63}, \gamma_{64}, \gamma_{71}, \gamma_{72}, \gamma_{73}, \gamma_{74}$).

Given my focus on theory testing, I made no attempt to develop a best-fitting model by adding paths based on modification indexes, deleting non-significant variables and paths, allowing observable variables to load on more than one latent factor, allowing correlated measurement errors, and so forth. It should also be noted that reversals in causal ordering and reciprocal causation, especially as they concern the relationship between cognition- and affect-based trust, were not examined.⁴ Nevertheless, within the nested-

³ LISREL parameter estimates are distorted when categorical variables are included in the analysis as interval scale measures. PRELIS provides for the computation of "polychoric" correlation coefficients between categorical variables and "polyserial" correlation coefficients between categorical and continuous variables as substitutes for Pearson product-moment correlations, but this procedure requires a sample of more than 200 subjects and considerable computational power (Jöreskog & Sörbom, 1988, 1989).

⁴ For two reciprocally related parameters to be overidentified, it is necessary for each to

models framework, considering constrained-parameter models allowed for detection of potential errors of commission (specifying unnecessary relationships) and considering relaxed-parameter models allowed for identification of potential errors of omission (excluding relationships that might have theoretical and practical significance). A specific advantage of the nested-models approach to theory testing is its potential for exploring relationships, not yet included in a model, that may have theoretical relevance (Anderson & Gerbing, 1988).

In addition to structural equation modeling, ordinary-least-squares (OLS) regression analysis was used to examine Hypotheses 2b (the relationship between cultural-ethnic similarity and cognition-based trust) and 2c (the relationship between a peer's professional status and a manager's cognition-based trust). I regressed cognition-based trust on all causally prior (exogenous) variables. For this analysis, I computed scales as the average of their indicator items. Multiple regression analysis is well established as an acceptable method for path computation in path analysis (Pedhazur, 1982).

RESULTS

Assessment of the Measurement Model

Table 4 presents correlations among all study variables. Table 5 reports results from the nested-models analysis, including structural path coefficients and model fit statistics.

The measurement model represents a confirmatory factor analysis of all scales used in the study. The normed comparative fit assessments for the confirmatory factor analyses of portions of the model (see Tables 1, 2, and 3) all met or exceeded .90, a generally accepted standard for acceptability, but the comparative fit index for the measurement model was .87. This finding mirrors Niehoff and Moorman's (1993) observation that as the number of latent variables included in a model increases, a researcher's ability to fit models, even those with strong theoretical support, decreases. Given the fact that this analysis included 11 distinct latent constructs, the achieved model fit is reasonable.

Four correlations among latent measures exceeded .60: the relationships between peer affiliative and assistance-oriented citizenship behavior, focal manager affiliative and assistance-oriented citizenship behavior, focal-manager-reported affect- and cognition-based trust, and focal manager affect-based trust and affiliative citizenship behavior. In part, these excessive coefficients reflect the fact that measures were obtained from a single source. As in initial scale development, I assessed discriminant validity by constraining phi coefficients (ϕ_{ij}) for pairs of constructs to 1.0 and conducting

have an instrument, an exogenous variable affecting one but not the corresponding variable (Kenny, 1979; Schaubroeck, 1990). In the case of the relationship between affect- and cognition-based trust, I found no significant instrument for cognition-based trust and accordingly, could not examine reciprocal causation.

TABLE 4
Correlations and Descriptive Statistics^a

Variables	Means	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Focal manager attitudes and behavior																
1. Cognition-based trust	5.43	1.28	.91)													
2. Affect-based trust	4.71	1.47	.83*** (.89)													
3. Need-based monitoring	4.44	1.33	.01	.31*** (.89)												
4. Manager citizenship behavior, affiliative	5.23	0.98	.43*** (.79)	.71**	.43***											
5. Manager citizenship behavior, assistance	4.03	1.57	.19**	.48*** (.85)	.48***	.48***										
Peer attributes and behavior																
6. Reliable role performance	6.22	.60	.06	-.07	-.05	.02	.07	.07	.07	.07	.05	.05	.05	.05	.05	
7. Professional status	1.43	1.24	.06	.06	-.18**	.05	-.03									
8. Peer citizenship behavior, affiliative	5.19	1.06	.13*	.39*** (.81)	.23***	.32***	.27***	-.05	.07	.07	.07	.07	.07	.07	.07	
9. Peer citizenship behavior, assistance	3.63	1.61	.09	.22**	.23***	.23***	.33***	-.03	.00	.52*** (.82)						
Relationship considerations																
10. Ethnic similarity	0.73	0.44	-.05	-.02	-.09	.00	-.01	-.08	.08	-.04	-.07					
11. Gender similarity	0.69	0.47	.03	.13*	.08	.15*	.16*	-.05	-.15*	.16*	.07	.03				
12. Interaction frequency	4.67	1.84	.19**	.39*** (.91)	.34***	.35***	.41***	-.06	-.02	.49***	.40***	.04	.14*	.14*	.14*	
Effectiveness measures																
13. Peer performance	5.06	1.27	.40*** (.92)	.18**	-.08	.12	.03	.14*	.06	.13*	.10	-.13	-.09	-.11	.09	
14. Focal manager performance	5.07	1.26	.15*	.26*** (.92)	.02	.23**	.00	.05	.01	.16*	.06	-.05	-.08	.03	.22	

^a Cronbach's alphas appear on the diagonal for multiple-item measures.

* p < .05

** p < .01

*** p < .001

TABLE 5
Structural Parameter Estimates for Nested-Models Analysis^a

TABLE 5 (continued)

Path Coefficient	Measurement Model	Theoretical Model	Constrained Models			Relaxed Models			Null Model
			1	2	3	1	2	3	
γ_{41}								.06	
γ_{42}								-.07	
γ_{43}								.17	
γ_{44}								.07	
γ_{51}								.21*	
γ_{52}								-.28*	
γ_{53}								.37***	
γ_{54}								.05	
β_{61}								-.20	
β_{62}								.50***	
β_{71}								.13	
β_{72}								-.11	
γ_{61}									.06
γ_{62}									.18
γ_{63}									.01
γ_{64}									.23**
γ_{71}									-.15
γ_{72}									-.17
γ_{73}									-.05
γ_{74}	1.843	2.032	2.068	2.230	2.061	2.025	1.973	1.989	.14
χ^2	1.072	1.107	1.111	1.111	1.113	1.103	1.104	1.095	2.015
df									7.089
GFI	.87	.84	.84	.81	.84	.84	.85	.85	1.099
$\Delta\chi^2$			36***	198***	29***	7	59***	33***	1.176
Δdf			4	4	6	4	3	12	.00

* Standardized path coefficients are reported. They represent relationships between variables within the theoretical model presented in Figure 2. Chi-square difference tests were computed on the basis of the deviation from the theoretical model.

* p < .05

** p < .01

*** p < .001

chi-square difference tests. For each pair of constructs, constraining the correlation to 1.0 made model fit significantly worse. This finding that these measures are better understood as distinct than joined, although not ruling out the presence of common method variance, supports the argument that method covariation alone cannot adequately account for the relationships observed (Podsakoff & Organ, 1986).

Assessment of the Structural Model

Results from the nested-models analysis (Table 5) indicate that the theoretical model provides only a limited explanation for the structural relationships among the variables. The measurement model's comparative fit index of .87 approximates the fit that would be achieved (given the present data) with the structural portion of the LISREL model perfectly fitted. Accordingly, the theoretical model's index of .84 may appear reasonable. Yet a chi-square difference test comparing the two models indicates that the measurement model provides a significantly better fit to the data than does the theoretical model ($\Delta\chi^2 = 189$, $\Delta df = 58$, $p < .001$).

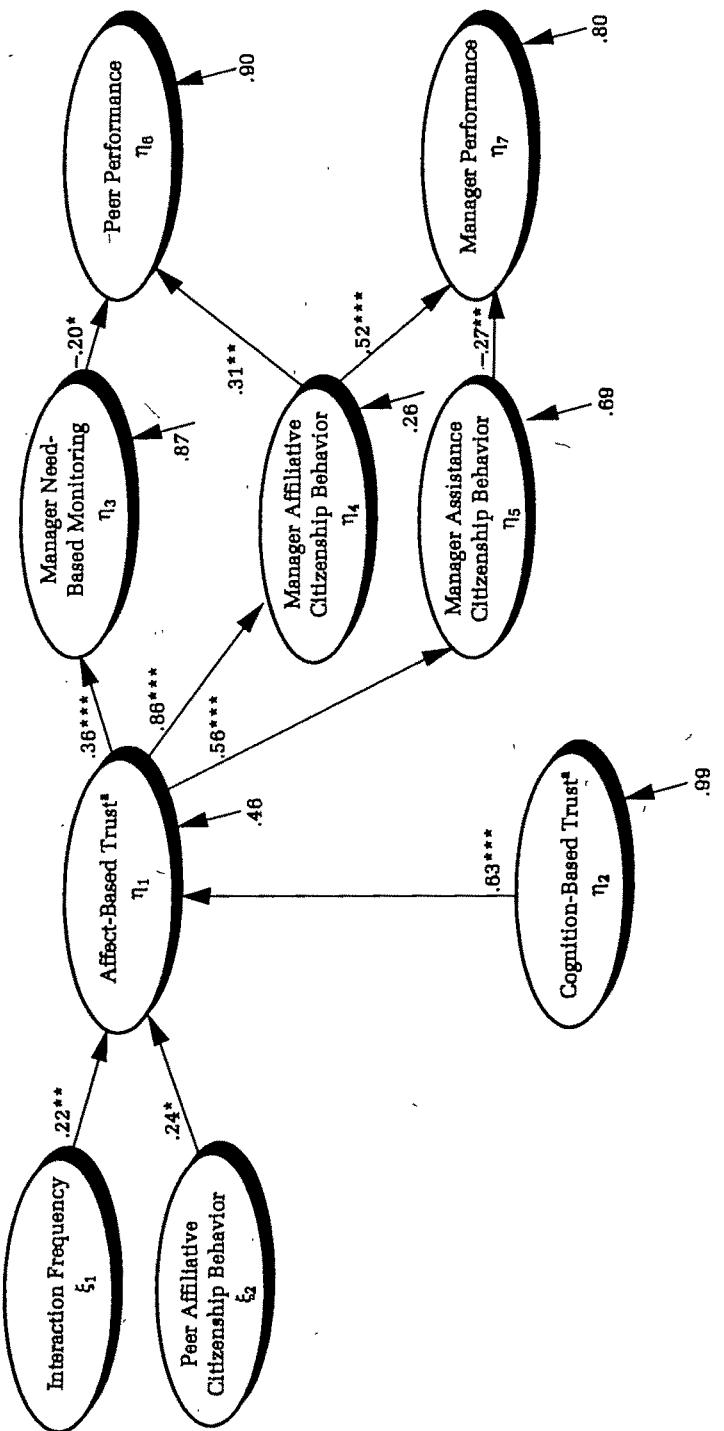
Figure 3 presents significant standardized path coefficients for the theoretical model. Also included are error terms (ζ s) for the structural equations. In standardized form, error coefficients represent the proportion of variance in each equation not accounted for in the structural model. Quite clearly, portions of the model fit the data better than others—for instance, 54 percent of the variance in affect-based trust was accounted for in the theoretical model, but only 10 percent of the variance in peer performance was explained. The theoretical framework may best be viewed as addressing antecedents and consequences of affect-based trust and not as comprehensively explaining the antecedents of performance.

Results from the nested-models analysis clarify the nature of the theoretical model's misspecification. In general, results of chi-square difference tests between that model and the constrained models indicate that fundamental relationships do exist between peer attributes and a focal manager's trust in peers, between the manager's trust in peers and his or her behavioral responses, and between those responses and performance outcomes. For each of the three constrained models, fit was significantly worse than the fit of the theoretical model. Thus, the paths that were included in the model should have been included. On the other hand, model fit assessments were significantly improved with the freeing of additional paths; those from focal manager trust beliefs (affect- and cognition-based) to behavioral responses, from antecedents to behavioral responses, and from trust to performance. Thus, considering additional relationships among study variables might enrich the model.

The Distinction Between Cognition- and Affect-Based Trust

Strong support was found for the distinction between cognition-based and affect-based trust predicted in Hypothesis 1. First, exploratory findings

FIGURE 3
Derived Path Coefficients Based on a Structural Equation Analysis of the Theoretical Model



* Direction of relationship is from manager to peer.

* $p < .05$

** $p < .01$

*** $p < .001$

with parallel data and confirmatory analysis results with the present sample (Table 1) indicate that the two-factor representation of affect- and cognition-based trust fits the data well. The two factors were shown to be reliable. Second, the pattern of relationships between the forms of trust and the other variables included in the study differ considerably. In the theoretical model, peer affiliative citizenship behavior was found to be positively associated with focal manager affect-based trust in peers but unrelated to cognition-based trust. Combining insights derived from the theoretical model with observations from the relaxed model in which additional paths between focal manager trust in peers and behavioral responses are freed suggests that although a focal manager's affect-based trust in peers is positively associated with need-based monitoring of peers and assistance-oriented citizenship behavior, cognition-based trust may be negatively associated with these variables. Thus, affect-based trust and cognition-based trust represent distinct forms of interpersonal trust.

Interpersonal Hypotheses: Relating Peer Attributes and Behavior to Trust Perceptions

In general, peer attributes and behavior were found to be related to focal manager assessments of peer trustworthiness (Table 5). Model fit assessments were appreciably worse with paths from hypothesized antecedents to trust constrained to zero; the change in chi-square between the theoretical model and the first constrained model was 36, $p < .001$. Further analysis indicated, as is apparent in Figure 3, that relationships between peer attributes and affect-based trust in particular explain this finding.

It was hypothesized that a manager's cognition-based trust in peers would be greater under three conditions: when peers exhibited high levels of reliable role performance (Hypothesis 2a), when the parties had cultural-ethnic similarity (Hypothesis 2b), and when peers had strong professional credentials (Hypothesis 2c). Hypothesis 2a was examined in the structural equation assessment of the theoretical model (Figure 3). The path from reliable role performance to focal manager cognition-based trust was not significant. Hypotheses 2b and 2c were examined in the supplementary OLS regression analysis and were also not supported. Regression analysis results, in which level of cognition-based trust was regressed on all causally prior variables, were not significant ($F = 1.60$, n.s.). Thus, findings do not support Hypotheses 2a, 2b, and 2c.

Hypotheses 3a and 3b, however, were strongly supported. I hypothesized that focal managers would express strong affect-based trust in peers engaging in interpersonal citizenship behavior (Hypothesis 3a) and in those with whom the managers interacted frequently (Hypothesis 3b). Significant, positive paths from interaction frequency and peer affiliative citizenship behavior to affect-based trust ($\gamma_{11} = .22$, $p < .01$; $\gamma_{12} = .24$, $p < .05$) supported predictions. Assistance-based citizenship behavior, however, was not found to be associated with affect-based trust.

Intrapersonal Hypotheses: Relationships Among Trust Perceptions and Behavioral Responses

Hypotheses 4, 5, and 6, addressing relationships among focal manager beliefs about peer trustworthiness and focal manager behavior, were generally supported. First, the hypothesis that cognition-based trust would be a positive predictor of affect-based (Hypothesis 4) was strongly supported ($\beta_{12} = .63$, $p < .001$). Second, results of the nested-models analysis demonstrated that managers' assessments of peer trustworthiness were associated with the managers' behavior toward their peers. Fit assessments were appreciably worse with paths associating focal manager trust perceptions with focal manager behavioral responses (β_{31} , β_{41} , and β_{51}) constrained to zero ($\Delta\chi^2 = 198$, $p < .001$). As Hypotheses 5a and 5b, concerning the behavioral consequences of cognition-based trust, were not tested, this finding is best understood as substantiating relationships from affect-based trust to its behavioral consequences only.

Results supported the hypotheses predicting that the affect-based trust focal managers expressed in peers would be positively associated with the managers' need-based monitoring of peers (Hypothesis 6a) and interpersonal citizenship behavior toward them (Hypothesis 6b). Paths from focal manager affect-based trust in peers to need-based monitoring, affiliative citizenship behavior, and assistance-oriented citizenship behavior were, as shown in Figure 3, all significant ($\beta_{31} = .36$, $p < .001$; $\beta_{41} = .86$, $p < .001$; $\beta_{51} = .56$, $p < .001$).

Performance Implications Hypotheses

In general, the behavioral consequences of trust were found to be related to supervisor assessments of performance. As the results of the nested-models comparison of the theoretical model with the third constrained model indicate (Table 5), model fit assessments were appreciably worse with paths from behavioral response latent constructs to performance measures (β_{63} , β_{64} , β_{65} , β_{73} , β_{74} , and β_{75}) constrained to zero ($\Delta\chi^2 = 29$, $p < .001$). Hypotheses 7, 8, and 9 address specific relationships among behavioral response and performance variables. Again, as Hypotheses 7a and 7b were not tested in this analysis, findings are best understood as substantiating the relationship between the behavioral consequences of the affect-based trust and performance outcome measures.

Results also only partially supported Hypotheses 8a and 8b. Focal manager need-based monitoring of peers was not positively associated with supervisor assessments of focal manager performance as hypothesized (Hypothesis 8a). Nevertheless, consistent with Hypothesis 8b, the path from focal manager affiliative citizenship behavior directed toward peers to supervisor assessments of focal manager performance was significant ($\beta_{74} = .52$, $p < .001$). An interesting, nonhypothesized finding was a significant negative path from assistance-based citizenship behavior to focal manager performance ($\beta_{75} = -.27$, $p < .01$). It may be that people see expressive acts

of interpersonal help and assistance serving more of a maintenance than a task function as aiding performance but see other practical acts of help and assistance as detracting from performance. This anomalous finding suggests that organizations may particularly value the expressive qualities of interpersonal citizenship behavior. It may also be that expressive conduct is more salient to supervisors than task-oriented assistance.

Hypotheses addressing the relationship between focal manager behavior and peer performance (Hypothesis 9a and Hypothesis 9b) were not supported. Nested-models analysis results do not show focal manager need-based monitoring of peers to be positively associated with peer performance. Indeed, for the theoretical model, focal manager need-based monitoring of peers was found to be negatively associated with peer performance ($\beta_{63} = -.20$, $p < .05$). This finding may reflect manager's tendency to look for opportunities to assist peers in real need of assistance (signified by their having low performance assessments). That is, the true causal ordering may be the reverse of that depicted in Figure 2.

Consistent with Hypothesis 9b, a significant positive relationship between focal manager affiliative citizenship behavior and peer performance was observed in the theoretical model ($\beta_{64} = .31$, $p < .01$). Yet when I examined this relationship at the same time as possible direct relationships between trust and performance outcomes, in the fourth relaxed model, this path was nonsignificant.

In summary, results did not support the hypotheses concerning the antecedents of cognition-based trust (2a through 2c). They did support hypotheses concerning the antecedents of affect-based trust (3a, 3b, and 4). The hypotheses concerning the behavioral consequences and performance implications of cognition-based trust were not tested. The hypotheses concerning the behavioral consequences of affect-based trust (6a and 6b) were supported. Partial support emerged for two of four hypotheses concerning the performance implications of affect-based trust.

DISCUSSION

The Nature of Interpersonal Trust

The findings of this research indicate that the beliefs of managers about the trustworthiness of peers can be measured along two dimensions, the extent of affect-based trust and the extent of cognition-based trust. In general, levels of cognition-based trust were higher than levels of affect-based trust, a finding consistent with the understanding that some level of cognition-based trust is necessary for affect-based trust to develop. Further, results indicate that, although cognition- and affect-based trust may be causally connected, each form of trust functions in a unique manner and has a distinct pattern of association to antecedent and consequent variables.

More theoretical work is needed to address the factors that can influence the development of cognition-based trust; such information should enrich

understanding of cognition-based trust itself. Theory-based predictors of cognition-based trust—a peer's reliable role performance, professional credentials, and social-ethnic similarity—were not found to be associated with cognition-based trust. One factor not addressed in the study was the local reputation of a peer as dependable and reliable. Supervisor assessments of peer performance were found to be strongly associated with a focal manager's cognition-based beliefs about peer trustworthiness ($r = .40$, $p < .001$). Quite likely, what others think about the dependability of a peer will influence personal evaluations of that peer. Future research will need to address reputational effects.

Observed differences in the pattern of relationships between forms of trust and predictor and consequence variables underscore the importance of considering not only the level but also the form of trust. In past research on citizenship behavior in organizations, authors have argued that trust and citizenship behavior are positively associated (Organ, 1990; Podsakoff et al., 1990). The present research indicates that there may be negative relationships between a focal manager's cognition-based trust in a peer and his or her affiliative- and assistance-oriented citizenship behavior toward the peer ($\beta_{42} = -.44$, $p < .001$; $\beta_{52} = -.67$, $p < .001$).⁵

Interpersonal Trust and Coordination

Focal managers expressing high affect-based trust in peers were shown to be more inclined to look for opportunities to meet peers' work-related needs and to engage in productive intervention. In the complex, uncertain situations involving reciprocal interdependence, typical in managerial and professional work, traditional mechanisms of coordination (rules, plans, routines, and such) are usually inadequate as contingencies cannot always be properly planned for (Katz, 1964; Thompson, 1967). Under these conditions, coordination is a continuous process in which all the actors involved adjust their actions to one another (Follett, 1937) and self-initiated mechanisms of coordination are critical. Need-based monitoring and citizenship behavior represent self-initiated steps that can promote coordination under turbulent conditions.

Findings did not generally support the hypotheses addressing the performance implications of behavioral responses to trust. One notable exception was the positive relationship found between focal manager affiliative citizenship behavior and supervisor assessments of focal manager performance. Interestingly enough, focal manager assistance-based citizenship behavior was negatively associated with supervisor assessments of focal manager performance. As defined here, affiliative citizenship behavior differed from assistance-oriented citizenship behavior in that it involved personal

⁵This finding may not be all that surprising. An individual who sees a peer as dependable and reliable, competent and capable, may have little reason to offer assistance, as little assistance appears to be needed.

assistance, was affect-laden and expressive, and served more of a maintenance than a task function. The logic behind managers' placing greater value on affiliative citizenship behavior than on more practical acts of interpersonal help and assistance merits systematic attention in future research.

The Social Fabric of Managerial Working Relationships

The current findings demonstrate the importance of affect-based trust relationships and the expressive qualities of interpersonal behavior. These findings extend current thinking on the nature of personal relationships among managers and professionals in organizations. Management scholars have recognized for some time that a considerable amount of managerial work is accomplished through interpersonal interaction and that the nature of the interpersonal relationships between managers and peers can determine their ability to get work accomplished (Gabarro, 1990; Mintzberg, 1973; Sayles, 1979). Less acknowledged, however, has been the affective element of these interpersonal relationships. The understanding has been that "because working relationships generally exist to accomplish tasks while social relationships [do] not, task achievement, task instrumentality and task-specific competence are especially important in work relationships, while affect and self-disclosure are less important" (Gabarro, 1990: 79). Given this view of affective factors as being somehow less important, their role in ongoing working relationships has remained unaddressed. In contrast, the focus here was on the inherent social nature of managerial work and on enhancing understanding of working relationships in organizations by recognizing their commonalities with other types of social relationships.

The expressive qualities of behavior in organizations should receive more systematic treatment in future research. Findings from the present theoretical model show that peer affiliative citizenship behavior in particular, rather than citizenship behavior in general, is associated with managers' affect-based trust in peers and that peer affiliative citizenship behavior is associated with managers' affiliative citizenship behavior only indirectly, through affect-based trust. Exploratory findings from a relaxed-parameter model with paths from antecedents of trust to managers' behavioral responses freed show peer assistance-based citizenship behavior to be positively associated with managers' assistance-oriented citizenship behavior ($\gamma_{53} = .37$, $p < .001$) but not with affect-based trust. It appears that managers distinguish between instrumental assistance from peers, which generates debts, and assistance from peers that is primarily demonstrative or expressive. As Kahn (1993) observed, exchanges of resources, time, information, counseling, and services can all serve more than instrumental purposes and, with appropriate affective content, can function as essential mechanisms of social support. In a study of interpersonal dyadic relationships within network-form organizations, Larson quoted an executive as stating, "The [extra] effort to help is as important as the help itself. The relationship has to be attended to" (1992: 89).

It appears that it is not unusual for managers, even those from different

areas of functional specialization and different organizational units, to develop relationships of care and concern for one another and for such sentiments to constitute an important basis for trust. Indeed, over 60 percent of the focal managers in this study, discussing their beliefs about their trust in peers, believed that, to some extent, they could talk freely with a specific peer and know that he or she would want to listen and respond constructively and caringly. Approximately 50 percent of the respondents believed that both they and the specific peers had made significant emotional investments in the working relationships and that both would feel a sense of loss if one or the other were transferred and they could no longer work together.

These findings support Seabright and colleagues' contention that "it is hard to imagine the development of highly specific relationship capital that does not engender some element of social ties" (1992: 155). Granovetter's general observation that "continuing economic relations often become overlaid with social content that carries strong expectations of trust and abstention from opportunism" (1985: 490) can be given added specificity—the sentiments of care and concern that connect individuals provide a principal foundation for this trust. Despite the prevalence of relationships of affect-based trust, very little theory or data exist to either guide understanding of the implications of such trust relationships for the individuals involved and their organizations or to distinguish these relationships from those based solely on cognition-based trust. The present research is an initial step toward articulating a theoretical framework for future research on how relationships of affect-based trust between managers in organizations influence their behavior and performance.

Study Limitations

The present findings should be interpreted in light of the study's limitations. First, because almost 75 percent of the study's participants were highly educated men, the findings are best interpreted as evidence concerning working relationships between such individuals. Further research is needed to establish the generalizability of these findings to other sorts of working relationships. Second, given the cross-sectional design, causality cannot be established from this study alone. My focus was on examining whether the pattern of relationships among variables was consistent with a specific causal understanding (Bobko, 1990). The present findings are an initial step on the road to causality determination. Supplemental longitudinal field studies and controlled laboratory experiments will both prove useful in future research. Finally, the disciplined confirmatory assessment of the theoretical framework through the nested-models analysis indicates that there remains considerable room for improvement in the fit of the theoretical model. Insights from the relaxed-parameter analyses, including possible negative paths from cognition-based trust in peers to need-based monitoring, affiliative citizenship behavior, and assistance-oriented citizenship behavior, indicate ways in which the model can be enriched, but these insights

must be understood as exploratory. Further theoretical and empirical work is needed to demonstrate that these findings are not unique to this sample and study.

Conclusion

This article assesses a theoretical framework for studying interpersonal trust in organizations, the factors influencing the development of trust relationships, and the mechanisms by which trust influences behavior in interdependent relationships and ultimately, the efficiency with which coordinated action is maintained. Empirical findings from an initial test of the framework support the fundamental distinction made between two principal forms of trust and the argument that each form should be understood. Further, the results of the research point to the importance of understanding the affective qualities of working relationships and the expressive qualities of various forms of interpersonal conduct.

Over fifteen years ago Burns (1977) expressed concern over existing conceptions of the role of the informal social relationships in organizations. Burns noted that Roethlisberger and Dickson saw the informal organization "as a receptacle for observations about the behavior, relationships, the sentiments and beliefs . . . taken to be irrelevant to the formal organization or incompatible with it," and that Barnard saw it as "an essential adjunct to formal organization." For Burns the theoretical and practical relevance of the informal organization went much further. He argued that "essential organizational processes involving actual operations and work are grounded in the person-to-person relationships formed by people at work, and as such constitute the necessary counterpart and complement to the control systems maintained by the management structure" (1977: 308).

In the present research, informal relations have been examined with the understanding that they are central to the real work of organizations. Findings establish the affective foundations upon which trust between managers is built as an essential counterpart to other foundations for interpersonal trust and highlight affect-based trust's role in facilitating effective coordinated action in organizations.

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BUILDING COMMITMENT, ATTACHMENT, AND TRUST IN STRATEGIC DECISION-MAKING TEAMS: THE ROLE OF PROCEDURAL JUSTICE

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This study examined how decision-making procedures can facilitate the positive attitudes necessary for cooperative relations in decision-making teams. We hypothesized that consideration of member input and members' influence on a decision affect their perceptions of procedural fairness and consequently, their commitment to the decision, attachment to the group, and trust in its leader. An experiment involving intact management teams supported these hypotheses and indicated that perceived fairness partially mediated the impact of procedures on commitment, attachment, and trust.

An organization is shaped by the stream of strategic decisions its managers make over time and by how they make those decisions (Bourgeois, 1984; Eisenhardt, 1989; Mintzberg & Waters, 1985). Managers often work in teams to make such decisions because the complexity and ambiguity of the issues with which they must grapple can overwhelm the capacities of any one individual (Child, 1972; Hambrick & Mason, 1984; Mason & Mitroff, 1981). A team's decision-making effectiveness depends in part upon its members' cooperativeness in providing information and in fully airing differences in assumptions and interpretations (Schweiger, Sandberg, & Rechner, 1989). The normative rational model of strategic decision making has focused on the production of high-quality decisions as a means of enhancing organization performance (Hitt & Tyler, 1991; Porter, 1980).

The ultimate value of high-quality decisions depends to a great extent upon the willingness of managers to cooperate in implementing those decisions (Guth & MacMillan, 1986; Maier, 1970; Woolridge & Floyd, 1990). But the limited evidence that exists suggests that processes deemed to lead to the highest-quality decisions may adversely influence team members' affective responses to the processes (Amazon, 1993). Strategic decision-making teams whose members have fully aired their views in reaching decisions are at times left uncommitted to the decisions and disinclined to work together in a cooperative manner in the future (Schweiger, Sandberg, & Ragan, 1986). A more complete view of effective decision processes should therefore consider not only the quality of decisions but also the impact of such processes

on team members' affective responses, such as commitment to the decision, attachment to a team, and trust in its leader. Some researchers have considered such affective responses to be components of cooperativeness (e.g., Pinto, Pinto, & Prescott, 1993), and others have treated them as antecedents of cooperation (e.g., Deutsch, 1962). We adopted the latter perspective and focused on the production of affective responses expected to enhance organizational cooperation.

Why is the level of commitment managers have to carrying out individual strategic decisions important to an organization? Commitment to carrying out a decision is important because the members of a decision-making team can delay or sabotage the implementation of initiatives (Guth & MacMillan, 1986); even slight delays can prove critical in highly competitive and dynamic environments (Eisenhardt, 1989). We define commitment here as the extent to which team members accept the strategic decision reached and intend to cooperate in carrying it out. Individuals' commitment to a strategic decision ensures that the mutual and consonant choices necessary for coordinated, cooperative effort will be made (Deutsch, 1957), whereas lack of commitment places a major constraint on the range of options the team's leader can consider (Guth & MacMillan, 1986). The extent to which team members agree with and cooperate with a decision can greatly affect the leader's ability to implement it (Hitt & Tyler, 1991). Finally, because strategic decisions are often interwoven and integrated with one another, lack of commitment to a decision generally has repercussions far beyond its impact on the success of that decision alone (Bourgeois, 1984; Eisenhardt, 1989).

The attachment that team members feel toward one another is also important to long-run cooperation in a group and its ultimate effectiveness (Deutsch, 1957; Schweiger et al., 1989). We define members' attachment to a team as the extent to which individuals feel themselves to be part of the team and look forward to working with other team members. Attachment differs from cohesiveness, which refers to the collective motivation of the group to remain together, in that attachment is an individual phenomenon and cohesiveness, a group one (Shaw, 1981). Alienation from other team members may impede a member's willingness to share information on future decisions (Bourgeois & Eisenhardt, 1988; Eisenhardt, 1989) and thus disrupt cooperation and coordination among members. Similarly, lack of attachment may exacerbate the tendency of members to pursue self-interest at the expense of reaching globally superior team decisions (Guth & MacMillan, 1986). Further, because strategic decisions are ambiguous and not all contingencies can be anticipated in advance, flexibility and willingness to live with differences in perspectives are important to the success of team processes. Members who feel attachment to a team are more apt to cooperate in reaching decisions speedily than those who feel little in common with the team or who do not enjoy interacting with other team members (Deutsch, 1949; Tjosvold & Field, 1983).

Theorists have suggested that leadership is particularly important to the strategic decision-making process (Thomas, 1988) and that to be effective,

the leader of a decision-making team must gain the trust of the team's members (Eisenhardt, 1989). Deutsch (1957) saw trust as a prerequisite to the existence of a stable cooperative system. Following Ring and Van de Ven (1992), we used trust here to represent the degree of confidence the members of a team have in the goodwill of its leader, specifically, the extent to which they believe that the leader is honest, sincere, and unbiased in taking their positions into account (Folger & Konovsky, 1988; Roberts & O'Reilly, 1974). Time and circumstances often require a leader to make decisions without team consensus (Bourgeois & Eisenhardt, 1988; Eisenhardt, 1989; Woolridge & Floyd, 1990). Because both honest differences of opinion and self-interested differences arise, a leader must upon occasion step in and choose an option because consensus cannot be reached in a timely fashion (Bourgeois & Eisenhardt, 1988). Further, managers often prefer to save time and effort by voicing their views and then letting the leader decide (Eisenhardt, 1989). Given diversity of views and interests, strategic decisions will rarely be popular with all the parties concerned. If a team's leader has not created in team members the necessary level of trust, lack of cooperation with decisions, unwillingness to share information, and sabotage of future decision processes may result. The challenge, then, for the team leader is to conduct the strategic decision-making process in such a way as to engender team members' commitment to decisions, attachment to the team, and trust in the leader's judgment.

The foregoing discussion suggests that the processes used to reach strategic decisions affect the commitment, attachment, and trust of individual team members and that these affective responses are critical antecedents of people's cooperation in implementing strategic decisions. This position is consistent with research and theory on the role of individual affect in fostering cooperation in groups (e.g., Deutsch, 1962; Tjosvold, 1984). Recent empirical evidence also supports the presence of a causal link between affective responses and cooperative behavior (Kim & Mauborgne, 1993; Pinto et al., 1993). Using procedural justice theory as a framework, Kim and Mauborgne predicted and found a link between managers' perceptions of procedural fairness, their affective responses to strategic decision processes, and their cooperation in implementing strategic decisions. Their work is important not only because it further supports the theorized link between affect and cooperative implementation behavior, but also because it demonstrates the potential usefulness of organizational justice theory for understanding strategic decision-making processes. Nonetheless, their work did not examine how perceptions of fairness and desired affective responses were produced.

In short, past research on strategic decision-making processes has focused on how the quality of decisions might be enhanced (e.g., Cosier, 1980; Schweiger et al., 1986; Schwenk, 1982) but has largely ignored the affective responses of team members to the processes employed to make strategic decisions (Eisenhardt, 1989; Guth & MacMillan, 1986). Nonetheless, theory suggests that how group members respond to decision processes is impor-

tant to the level of cooperation that can be achieved (Barnard, 1938). Kim and Mauborgne (1993) took an important step in illuminating this phenomenon by demonstrating the link between fairness perceptions and cooperative behavior. In this study, we sought to extend their work by examining the antecedents of perceptions of procedural justice and to extend the existing literature on strategic decision making by examining how commitment, attachment, and trust are created—or undermined—through the strategic decision-making process.

PROCEDURAL JUSTICE IN STRATEGIC DECISION MAKING

Procedural justice theory is concerned with the impact of the fairness of decision-making procedures on the attitudes and behavior of the people involved in and affected by those decisions. The basic premise of justice theories is that fair treatment is central to people and a major determinant of their reactions to decisions. Research on procedural justice evolved from equity theory (Adams, 1965), which is concerned with the fair distribution of resources. Researchers found that people care not only about the outcome of decisions, but also about the procedures used to make decisions. In fact, people are affected by the perceived fairness of such procedures regardless of the perceived fairness of a decision itself (Folger & Konovsky, 1989; McFarlin & Sweeney, 1992). Procedural justice theory distinguishes between control over a decision outcome and control over the decision process and is particularly focused on the meaning of involvement in decision making (Thibaut & Walker, 1975). Hence, it is well suited to enhance understanding of affective reactions to group decision making and the design of decision-making procedures. Several aspects of decision-making procedures are relevant to creating perceptions of fairness; we focus on two: consideration of member input and influence over a decision. Consideration of input refers to the extent to which a team leader shows consideration of the input team members bring to a decision-making process; influence refers to the extent to which the members' input affects or is reflected in the final decision. The distinction is important because time pressures as well as competing internal and external demands prevent team members from having significant influence over every strategic decision (Bourgeois & Eisenhardt, 1988; Dess & Origer, 1987; Eisenhardt, 1989; Woolridge & Floyd, 1990).

Research on participation in decision making has also examined the impact of decision-making procedures on affective reactions. Researchers have examined a variety of techniques designed to enhance participants' attitudes (Maier, 1970; Tannebaum & Schmidt, 1973; Vroom & Yetton, 1973). Prescribed participative decision-making styles range from a consultative style, in which participants are consulted about but do not control decisions (similar to consideration), to joint decision making, in which participants make decisions together (similar to influence; Yukl, 1994). However, a lack of consensus on the mechanisms underlying participation have presented research conclusions on the impact of participation in decision

making (Greenberg & Folger, 1983; Locke & Schweiger, 1979). In particular, this stream of research has not clarified whether influence is necessary for participation in decision making to have an impact and what role, if any, consideration of input plays in participation in decision making (Greenberg & Folger, 1983; Hoffman, Burke, & Maier, 1970). By distinguishing between consideration and influence, the procedural justice perspective provides some insight into the mechanisms of participation.

What Makes Decision-Making Procedures Fair?

The procedural justice literature provides guidelines for structuring procedures to maximize fairness perceptions. One primary means is through voice: allowing individuals affected by the decision to present information relevant to it (Folger, 1977). Even when a particular decision is unfavorable to them, if individuals have voice they will feel that their interests are protected in the long run and will consider the process fair (Thibaut & Walker, 1975). Having input into a decision also makes people feel the decision maker or leader values them and affirms their status in the group or organization. Procedures that signify to participants that they are respected members of a group are deemed fair (Lind & Tyler, 1988). An individual's merely having a chance to say something does not, however, ensure perceptions of procedural fairness. Consideration of input, the extent to which a decision maker acknowledges and shows consideration of others' input, is needed for voice to affect perceptions of fairness. If people's input is solicited but ignored, voice is void of meaning; individuals will not feel a sense of indirect control or of status and respect. Several studies have found that voice in decisions had a stronger, more positive impact on judgments of fairness when people believed a decision maker considered their input (Leung & Li, 1990; Lind, Kanfer, & Earley, 1990).

A basic premise of this study is that the members of a strategic decision-making team have voice in strategic decisions. We define a team member as an individual who regularly has input into strategic decisions. However, how team leaders respond to input is what shows team members whether their opinions are actually considered. Shapiro (1993) found that managers' perceptions that their input was considered were related to the communication behaviors of their superiors; specifically, managers felt that input was considered when superiors listened attentively and patiently and made an attempt to understand the managers' viewpoint. Conversely, team members can become frustrated if they feel a team leader does not give their views adequate consideration (Bourgeois & Eisenhardt, 1988). Shapiro and Brett (1993) found that a decision maker's behavior, including the extent to which he or she showed consideration of input, was significantly related to perceptions of procedural fairness, regardless of the degree of control individuals had over the decision outcome. Thus, a team leader's consideration of member input is critical to ensuring that team members perceive decision making as fair and acceptable. Therefore,

Hypothesis 1a: Leader consideration of team members' input has a positive impact on team members' perceptions of procedural fairness. Team members whose input is considered should judge the decision-making procedure to be more fair than members whose input is not considered.

When Are Fair Procedures Most Important?

Giving members voice in the decision-making process allows them some degree of indirect control over a decision. Indirect control over decisions should be particularly important when direct control is not possible; that is, when members do not directly influence decision outcomes. In fact, Tyler, Rasinski, and Spodick (1985) found that the effect of voice on judgments of fairness was stronger when group members had less direct control over decisions. Procedural justice researchers have asserted that when a decision does not meet individuals' preferences, they are more apt to carefully assess the procedures used to make the decision (Leung & Li, 1990). This greater attentiveness to how the decision was made is likely to cause procedural factors like consideration to play a greater role in perceptions of fairness. Indeed, Leung and Li found that the impact of consideration on individuals' perceptions of procedural fairness was greatest when their preferences were not met. Consideration is especially important to people under these circumstances because it assures them that their opinions were respected and that they had an opportunity to affect the decision (Shapiro, 1993). This logic suggests that when team members' input does not influence a leader, they are likely to be particularly sensitive to how much consideration their views were given during the decision-making process. Eisenhardt (1989) substantiated this position in a team context, finding that team members wanted to be sure that their team leaders heard and understood their views, especially when the leaders alone made the decisions; she labeled this process "consensus with qualification." We have argued that the consideration a team leader shows for team members' views will affect members' perceptions of the fairness of the decision procedure and that this impact will be greater when team members have little direct influence over the final decision. Therefore,

Hypothesis 1b: The impact of a team leader's consideration of team members' input on perceptions of procedural fairness is moderated by the influence members have over a final decision. Specifically, the effect of consideration is stronger when member influence is low than when it is high.

Consequences of the Fairness of Decision-Making Procedures

Procedural justice theorists have argued that fair procedures serve two purposes. One is to help protect individuals' interests; over the long run, fair

procedures should result in individuals' receiving what they are due. Consequently, the fairness of procedures is associated with positive attitudes toward a decision, such as satisfaction, agreement, and commitment (Lind & Tyler, 1988). The second function of fair procedures is symbolic and helps to strengthen individuals' relationships with a group, leader, and organization. Fair procedures serve as a sign to individuals that they are valued and respected members of the group or organization and thus promote harmony and trust in relationships with others. Consequently, fair procedures are associated with positive attitudes toward the group, leader, and organization, such as group harmony, trust in the leader, and organizational commitment (Lind & Tyler, 1988). We have outlined two factors, leader consideration of input and member influence over a decision, that are important to creating a sense of procedural fairness. We now develop hypotheses regarding how team members' perceptions of procedural fairness in a decision-making process will affect their commitment to the decision reached through the process, their attachment to the decision-making team, and their trust in the team's leader.

Decision commitment. A determinant of the successful implementation of strategic decisions is the degree to which team members are committed to the course of action outlined in the strategy (Dess & Origer, 1987; Woolridge & Floyd, 1990). Procedures promoting perceptions of fairness are likely to strengthen the team members' commitment to the decision (Earley & Lind, 1987). Our position is that when the leader of a team acknowledges team members' input, they are more apt to be committed to the decision reached. Guth and MacMillan (1986) speculated that decision commitment on the part of middle managers is related to access to the leader and the extent of serious attention their positions are given. Eisenhardt and Bourgeois (1988) also found that team members were willing to accept decisions made by their firm's chief executive officer (CEO) when they had been able to voice their views but were frustrated with the process if they perceived that the CEO did not listen to them. Thus, consideration of team member input should result in greater commitment to strategic decisions.

Hypothesis 2a: A team leader's consideration of team members' input has a positive impact on the members' commitment to a final decision. Team members whose input is considered should be more committed to the decision than members whose input is not considered.

As noted above, procedural fairness is likely to affect reactions to decisions, such as commitment to them, because it helps individuals protect their interests, at least in the long run (Lind & Tyler, 1988). Individuals may also be able to protect their interests in a particular decision when they have direct control over it. The decision represents their ideas and preferences, so their commitment to it should be strong. However, when members see little evidence of their influence on a decision, the procedures used to reach the

decision are likely to have a greater impact on their commitment to the decision. Thus, consideration of input should be particularly important when members have little influence over a final decision. Therefore,

Hypothesis 2b: Team members' influence moderates the impact of leader consideration on decision commitment.

Consideration has a stronger impact on decision commitment when member influence is low than when it is high.

Group attachment. Team members' relationships to one another are important to the implementation of strategic decisions as well as to the continued functioning of a team. When individuals feel a sense of attachment to their group, they will work more cooperatively and more diligently to ensure that group goals are met (Deutsch, 1949; Janis, 1982). Conversely, acrimony among team members limits consensus and acceptance of decisions (Nutt, 1987; Woolridge & Floyd, 1990). As noted earlier, fair procedures have symbolic meaning to group members: having input into decisions signals individuals they are valued and respected members of the group (Lind & Tyler, 1988). Alexander and Ruderman (1987) found that perceptions of procedural justice were negatively associated with group conflict. However, for input to carry this meaning, the decision maker must consider it. That is, members feel their status in the group is confirmed when their input is taken seriously. Individuals are likely to feel more attached to the group when they sense that they are members in good standing. Thus, consideration of team member input should enhance members' attachment to the group. Eisenhardt and Bourgeois's (1988) observation that there was less political infighting in teams whose leaders had consultative styles provides some indirect support for the model in a strategic decision context.

Hypothesis 3: A team leader's consideration of team members' input has a positive impact on members' attachment to the team.

Trust in the leader. Strategic decisions will not always be made by consensus, nor will a team leader's decisions always equally favor all members of a team. Consequently, the team leader needs the trust of members to maintain direction over the process of making and implementing strategic decisions. Procedures involving meaningful participation are likely to affect members' feelings of trust in the team leader. Several studies have demonstrated that perceptions of procedural fairness are positively related to trust in the leader or decision maker (Alexander & Ruderman, 1987; Folger & Konovsky, 1989; McFarlin & Sweeney, 1992). Further, Eisenhardt's (1989) study suggests that a chief executive officer's style can give team members confidence that their views will be taken into account and allows them to feel comfortable leaving the ultimate decision in the CEO's hands. Trust is strengthened because individuals feel they are treated as legitimate, respected members of the team. The leader's consideration of member input

helps communicate this message to members and therefore should affect members' trust in the leader. Therefore,

Hypothesis 4: A team leader's consideration of team members' input has a positive impact on the members' trust in the leader.

The Mediating Effect of Perceived Fairness

Implied in the previous discussion of commitment, attachment, and trust is that procedural factors such as consideration and influence affect these attitudes because procedures create a sense of fairness. Fair procedures allow individuals to have a sense of indirect control over the outcome, thereby promoting commitment to the decision. Fair procedures also indicate members' status and value to the group and leader, thereby promoting positive attitudes toward both. In other words, perceptions of fairness mediate the effects of decision-making procedures on decision commitment, group attachment, and trust in the leader. Specifically,

Hypothesis 5a: Perceptions of procedural fairness mediate the impact of consideration and the interaction of consideration and influence on commitment to a decision.

Hypothesis 5b: Perceptions of procedural fairness mediate the impact of consideration on attachment to a group.

Hypothesis 5c: Perceptions of procedural fairness mediate the impact of consideration on trust in a team leader.

METHODS

Setting and Design

To test these hypotheses, we conducted an experiment with intact teams of middle- and upper-level managers. An intact management team is a pre-existing, relatively permanent team of employees, as opposed to an ad hoc group. The use of such teams had two principal advantages over using ad hoc groups. First, members of intact management teams are more likely to be emotionally invested in their teams than are members of ad hoc groups. Second, members of such teams have established relationships with the team's other members and leader. Consequently, intact teams provide a more realistic and stringent test of the impact of decision-making procedures than do ad hoc teams.

The sample consisted of 20 intact management teams of a Fortune 500 company participating in its executive development program on strategic management. Teams were drawn from three divisions of the company: consumer electronics, industrial electronics, and medical technology, and each consisted of 3 to 6 middle- or upper-level, fast-track managers and a leader. The sample included 89 team members and 20 team leaders. On the average,

team members were 41 years old, had worked for the company for 5 years, had been in their current positions for 3 years, and had been with their teams for 3 years. Eighty-one percent of the members were men. The mean age of team leaders was 45 years, and their average length of company experience was 8 years. Team leaders had been in their current positions for an average 5 years and had been with their teams for 4 years. Eighty-five percent of the leaders were men.

A two-by-two factorial design was employed, in which we manipulated consideration (high or low) and influence (high or low), to produce four experimental conditions. To minimize potential confounding effects of systematic differences while preserving the intact teams, we used random assignment at the team level, with five teams assigned to each of the four conditions.

Procedure and Task

The study was conducted in the context of a training session on strategic decision making. Team members first participated in a session on strategy formulation to ensure their exposure to concepts of strategy. The groups in each experimental condition had a separate training session. At the beginning of each session, we administered a questionnaire containing demographic questions and premeasures on perceptions of the group and leader. Teams were instructed in a structured, group-based decision-making technique that they were to apply to a strategic management case. The case used in this study was the Leitch Quality Drug Company (Glueck, 1980). Following the decision-making exercise, a second questionnaire was administered that included the dependent variables and manipulation checks.

The object of the case analysis was to make recommendations to the managing partner of Leitch and to state supporting facts and assumptions. Team members were to assume the role of members of Leitch's top management team and provide input to their team leader, who had responsibility over the final decision to which the recommendations pertained. First, team members worked on the case individually, analyzing the company's situation and developing recommendations and supporting assumptions. Each team leader received oral instructions on how to lead the structured group discussion that was to follow the individual analysis process; the manipulations were embedded in these instructions, which are reproduced in the Appendix. Leaders were instructed to allow each group member to present his or her assumptions and recommendations without comment from others. After all members had presented their analyses, the leader separated from the group and made the final decision concerning the case. The leader then returned and communicated this decision to the team.

Experimental Manipulations

Consideration. Leaders were instructed to show high or low consideration to each member's input. The manipulation of consideration was based on behaviors identified by Shapiro (1993). Leaders in the high consideration

condition were required to actively listen to each member's presentation of the case and to acknowledge individuals' input in communicating the final decision. Active listening involved asking clarifying questions, taking notes, and rephrasing the members' statements. Acknowledgment of input involved leaders' noting the commonality of or difference between a member's recommendations and their own. In the low consideration condition, leaders were instructed to listen without comment to the input of group members and to present their final decisions without acknowledging members' input.

Influence. Leaders in the high influence condition was instructed to change their decisions using whatever team member input they chose. Leaders in this condition were not forced to incorporate all member input because doing so might compromise the quality of decisions. Leaders in the low influence condition were instructed to present their own, initial decisions as their final decisions. In both conditions, team members were not told how or if the leaders would use their input, and leaders were instructed not to reveal the extent to which members influenced their decisions.

Measures

Perceived procedural fairness was measured by four 9-point Likert-type items, adapted from Tyler and Cain (1981) and Tyler and colleagues (1985), that assessed the perceived fairness of the procedures used to make a decision; an example is "How fair were the decision-making procedures used by your team leader to make his/her case recommendations?" We averaged the items into a single index of procedural fairness ($\alpha = .96$). Decision commitment concerned members' commitment to a team leader's decision and was captured by two 9-point Likert-type items developed by Earley and Lind (1987); an example is "If the case were a situation your team was actually facing, how committed would you be to the recommendations decided upon by your team leader?" The average rating of these two items was used as an index of commitment ($\alpha = .89$).

Attachment to the group concerned the extent to which members identified with and desired to interact with their teams and was assessed by the average rating of two 9-point Likert-type items adapted from the Michigan Organizational Assessment Questionnaire (Seashore, Lawler, Mirvis, & Cammann, 1982). An example is "I feel I am really part of my team." Because we used intact teams, we assessed the effects of the manipulations on changes in attachment, measuring it before and after the decision-making exercise. The coefficient alpha of this scale was .91 on both the pretest and posttest measures. Trust in the leader addressed the degree to which team members believed their team leaders were trustworthy and was measured by the mean of four 9-point Likert-type items developed by Roberts and O'Reilly (1974); an example is "I feel free to discuss the problems and difficulties I have in my job with my manager." Both pretest and posttest measures of trust were administered ($\alpha = .89$ and $.97$, respectively).

Decision quality. Previous research on strategic decision-making techniques suggests that there may be a trade-off between achieving high-quality

decisions and member acceptance of those decisions. For example, a consensus approach generates more acceptance than more conflict-based approaches but also results in lower-quality decisions (Schweiger et al., 1989). Thus, we assessed the effects of consideration and influence on decision quality as a means of assuring that procedures designed to be fair did not adversely affect decision quality.

Decision quality was evaluated by two independent judges, one an academic and one a member of the studied organization. Using the rating procedure outlined by Schweiger and colleagues (Schweiger et al., 1986, 1989), judges evaluated the team leaders' final assumptions and recommendations along three dimensions: the validity of assumptions, the importance of assumptions, and the overall quality of recommendations. They rated the validity of assumptions on a five-point scale ranging from 1, "low confidence in the validity," to 5, "high confidence in the validity." Each assumption was rated separately; we aggregated validity ratings for each team into an overall rating. The importance of assumptions was rated on a five-point scale ranging from 1, "not important," to 5, "very important." For an overall rating of importance, we averaged the importance ratings made for each assumption. The quality of recommendations was rated on a five-point scale ranging from 1, "low-quality recommendation," to 5, "high-quality recommendation." The degrees of the judges' agreement for validity, importance, and quality were 91, 87, and 89 percent, respectively. All disagreements were resolved through discussion. We aggregated ratings of these three dimensions to form a single decision-quality composite for each team ($\alpha = .79$).

Manipulation checks. The manipulation of consideration was evaluated by two 9-point Likert-type items, completed by team members, concerning the extent to which a leader listened carefully and acknowledged a member's input. We measured the efficacy of the manipulation of influence by two Likert-type items, completed by leaders, assessing the extent to which the leaders revised their assumptions and recommendations on the basis of member input. Table 1 gives descriptive statistics and correlations for all variables.

RESULTS

Manipulation Checks

Results of a *t*-test showed that the manipulation of consideration resulted in significantly different perceptions, with members of groups in the high consideration condition reporting greater consideration of their input (high consideration, $\bar{x} = 6.10$, low consideration, $\bar{x} = 3.76$; $t_{17} = 6.91$, $p < .05$). The analysis of the manipulation check for influence also showed a significant difference between conditions, with leaders in the high influence group more likely to use member input (high influence, $\bar{x} = 7.20$, low influence, $\bar{x} = 4.05$; $t_{18} = 6.89$, $p < .05$).

TABLE 1
Means, Standard Deviations, and Correlations^a

Variables	Means	s.d.	1	2	3	4	5	6	7	8
1. Influence ^b	0.51	0.51								
2. Consideration ^b	0.51	0.51	.06							
3. Procedural fairness	4.76	1.25	.36	.53						
4. Decision commitment	4.93	0.44	.18	.26	.29					
5. Pretest attachment to group	6.06	1.06	-.05	-.25	.19	-.13				
6. Posttest attachment to group	6.13	0.92	.05	.27	.40	.14	.44			
7. Pretest trust in leader	6.23	0.96	-.14	-.27	.11	-.18	.78	.42		
8. Posttest trust in leader	6.18	1.10	.37	.16	.60	.11	.42	.51	.43	
9. Decision quality	3.73	0.56	.55	.06	.49	.39	.18	.31	.12	.52

^a For the first eight variables ($n = 89$), correlations greater than .20 are significant at $p < .05$. Correlations with decision quality ($n = 20$) that are greater than .45 are significant at $p < .05$.

^b Influence and consideration are coded 0 = low, 1 = high.

Effects of Consideration and Influence

Perceptions of fairness. Given that the processes and outcomes are hypothesized to occur at the individual level, the unit of analysis for this study was the individual. Because random assignment occurred at the team level, we used a nested design and followed a three-way nested analysis of variance (ANOVA) procedure to account for within-condition team effects (Kirk, 1982). This procedure accounts for the variance due to within-condition differences between teams and uses this term as the error term to produce a more stringent F. Table 2 summarizes ANOVA results for the effects of the independent variables on perceived fairness, and Table 3 reports descriptive statistics within condition.

Hypothesis 1a, which states that consideration of member input will have a positive effect on perceptions of procedural fairness, was supported ($F_{1,16} = 12.02, p < .01$). Specifically, members of the high consideration groups judged the procedure to be more fair than those in the low consideration groups (high consideration, $\bar{X} = 5.41$, low consideration, $\bar{X} = 4.10$). Hypothesis 1b, predicting that the effect of consideration on perceptions of fairness would be stronger for low influence teams, received weak support ($F_{1,16} = 3.70, p < .10$).

Decision commitment. The effects of the independent variables on decision commitment were analyzed via a three-way ANOVA, with team as a nested factor (Table 2). Results supported Hypothesis 2a, predicting that consideration of member input will result in higher decision commitment.

TABLE 2
Results of Analyses of Variance

Dependent Variables	Independent Variables	df	F
Procedural fairness	Consideration	1,16	12.02**
	Influence	1,16	7.30*
	Consideration × influence	1,16	3.70†
	Team (consideration × influence)*	16,69	4.99***
Decision commitment	Consideration	1,16	10.20**
	Influence	1,16	5.39*
	Consideration × influence	1,16	10.05**
	Team (consideration × influence)*	16,69	0.58

* Significant effects of this term (the nesting factor) indicate greater error variance resulting from team differences in the dependent measure.

† p < .10

* p < .05

** p < .01

*** p < .001

The results show a significant main effect of consideration on commitment to the leader's decision (high consideration, $\bar{X} = 5.04$, low consideration, $\bar{X} = 4.81$; $F_{1,16} = 10.20$, $p < .01$). Hypothesis 2b, which states that the effect of consideration on commitment will be stronger when influence is low, was supported by the significant interaction of influence and consideration ($F_{1,16} = 10.05$, $p < .01$). Post hoc comparisons of the group means (Table 3) revealed that consideration only has an impact on decision commitment when influence is low.

Attachment to the group. We used a repeated-measures analysis to test the impact of the independent variable on changes in the dependent variable. Table 4 reports results for the effects of influence and consideration. Table 3 gives cell means for attachment to the group measured before and after the manipulations.

TABLE 3
Means and Standard Deviations by Condition

Dependent Variables	Low Influence				High Influence			
	Low Consideration		High Consideration		Low Consideration		High Consideration	
	Means	s.d.	Means	s.d.	Means	s.d.	Means	s.d.
Procedural fairness	3.41	0.57	5.28	0.80	4.84	1.52	5.51	0.66
Decision commitment	4.65	0.59	5.07	0.33	5.00	0.27	5.02	0.38
Pretest attachment to group	6.13	1.01	6.10	0.90	6.52	1.27	5.54	0.85
Posttest attachment to group	5.57	0.74	6.67	1.17	6.24	0.77	6.13	0.63
Pretest trust in leader	6.30	0.85	6.43	0.73	6.69	1.08	5.57	0.82
Posttest trust in leader	5.31	1.19	6.26	0.76	6.75	1.19	6.43	0.64
Decision quality	3.33	0.47	3.53	0.45	4.07	0.60	4.00	0.47

TABLE 4
Results of Repeated-Measures Analyses

Dependent Variables	Independent Variables	df	F
Attachment to group	Time	1,69	0.03
	Consideration × time	1,16	14.36**
	Influence × time	1,16	0.50
	Consideration × influence × time	1,16	0.14
	Time × team (consideration × influence) ^a	16,69	2.36**
Trust in leader	Time	1,69	0.46
	Consideration × time	1,16	11.51**
	Influence × time	1,16	20.87***
	Consideration × influence × time	1,16	0.13
	Time × team (consideration × influence) ^a	16,69	1.81*

^a Significant effects of this term (the nesting factor) indicate greater error variance resulting from team differences in the dependent measure.

* p < .05

** p < .01

*** p < .001

Hypothesis 3, predicting that consideration will have a positive effect on attachment to the group, was supported in that there was a significant interaction of time and consideration ($F_{1,16} = 14.36$, $p < .01$). This finding indicates that levels of attachment changed as a function of leader consideration of member input. Post hoc comparisons of group means revealed that attachment increased for members given high consideration (pretest, $\bar{X} = 5.80$, posttest, $\bar{X} = 6.36$) but decreased for members given low consideration (pretest, $\bar{X} = 6.31$, posttest, $\bar{X} = 5.89$).

Trust in leader. A repeated-measures analysis was conducted to test Hypothesis 4, which predicts that consideration will have a positive effect on trust in a leader. As Table 4 indicates, the significant interaction of time and consideration supported this prediction ($F_{1,16} = 11.51$, $p < .01$). Post hoc comparisons confirmed, as the pattern of means suggests, that members' trust in leaders increased if the formers' input was considered (pretest, $\bar{X} = 5.97$, posttest, $\bar{X} = 6.35$) but decreased if their input was not considered (pretest, $\bar{X} = 6.49$, posttest, $\bar{X} = 6.00$).

Decision quality. To analyze the effects of consideration and influence on decision quality, we conducted a two-way ANOVA with team as the unit of analysis. As anticipated, consideration did not have a significant effect on decision quality ($F_{1,16} = 0.09$), nor did the interaction of consideration and influence ($F_{1,16} = 0.36$).

Unanticipated Effects of Influence

In addition to the hypothesized effects of the manipulations, influence alone had an impact on a number of dependent variables. Influence had a significant main effect on perceptions of fairness, with members of groups in

the high influence condition judging the procedure as more fair (high influence, $\bar{x} = 5.20$, low influence, $\bar{x} = 4.31$; $F_{1,16} = 7.30$, $p < .05$). Influence also had a significant main effect on decision commitment, with members in the high influence condition more committed to the leader's decision (high influence, $\bar{x} = 5.01$, low influence, $\bar{x} = 4.85$; $F_{1,16} = 5.39$, $p < .05$). Further, the interaction of influence and time had a significant effect on trust ($F_{1,16} = 20.87$, $p < .001$). Post hoc comparisons of group means revealed that in the high influence groups, members' trust in their team leaders increased over time (pretest, $\bar{x} = 6.09$, posttest, $\bar{x} = 6.58$), whereas trust decreased in the low influence condition (pretest, $\bar{x} = 6.36$, posttest, $\bar{x} = 5.77$). Finally, influence had a significant, positive effect on decision quality ($F_{1,16} = 7.20$, $p < .05$), in that leaders of teams in the high influence condition ($\bar{x} = 4.03$) made better-quality decisions than leaders of teams in the low influence condition ($\bar{x} = 3.43$). Thus, when team members are allowed to influence a leader's decision, the quality of the decision is enhanced.

Mediating Effects of the Perceived Fairness of Procedures

It was hypothesized that perceptions of procedural fairness would mediate the impact of consideration and influence on decision commitment, attachment, and trust. For us to demonstrate such a mediating effect of perceived procedural fairness, the independent variables had to be related to fairness perceptions and to the dependent variables (Baron & Kenny, 1986). These two conditions were met in the ANOVA results outlined above. Further, the relationship between the independent and dependent variables had to diminish or disappear after the variance due to the perceived fairness of the procedures was accounted for (Baron & Kenny, 1986). To test for this condition, we conducted an analysis of covariance (ANCOVA), with perceived fairness as the covariate, for each of the dependent variables.

Hypothesis 5a predicts that perceived procedural fairness will mediate the main effect of consideration and the interaction of consideration and influence on decision commitment. The results of the ANCOVA revealed that both effects were still significant when we controlled for perceived fairness (consideration, $F_{1,16} = 4.58$, $p < .05$; consideration \times influence, $F_{1,16} = 7.31$, $p < .05$). However, the magnitude of these effects was smaller when we controlled for perceived fairness: without the control, the main effect of consideration had an eta-square equal to .05; with fairness perceptions as a covariate, the eta-square for consideration was equal to .01. A similar result was found for the interaction of consideration and influence (without fairness perceptions, $\eta^2 = .05$; with fairness perceptions, $\eta^2 = .03$). These results suggest that perceived fairness partially mediates the effects of consideration and influence on decision commitment.

Hypothesis 5b states that perceptions of procedural fairness will mediate the effect of consideration on group attachment. The ANCOVA results indicated that that effect was still significant with perceived fairness controlled ($F_{1,18} = 13.06$, $p < .01$), and its magnitude was slightly reduced when perceived fairness was accounted for (without fairness perceptions, $\eta^2 =$

.07; with fairness perceptions, $\eta^2 = .06$). This finding suggests that perceived fairness provides weak, partial mediation of the effect of consideration on attachment to the group.

Hypothesis 5c predicts that procedural fairness perceptions will mediate the effect of consideration on trust. That effect was not significant with perceived fairness accounted for ($F_{1,16} = 3.13, p > .05$), indicating that the perceived fairness of procedures fully mediates the impact of consideration on trust.

DISCUSSION

This study examined the impact of different decision-making procedures on intact management teams in three divisions of a Fortune 500 company. In so doing, it sought to shed light on the antecedents of organizational cooperation and to contribute to research on strategic decision making and procedural justice. The results indicate that the processes by which strategic decisions are made do indeed have a significant impact on team members. Specifically, the manner in which team leaders elicit, receive, and respond to team members' input affects their attitudes toward the decisions themselves and toward the other members of teams, including the leaders. This study's most important finding may be that, even in intact management teams, with their attendant histories, values, and norms of behavior, leaders' styles of conducting a decision-making procedure elicited changes in team members' affect toward the teams and the leaders and influenced how committed team members were to the decisions reached. The results hold out the possibility that leaders of strategic decision-making teams can use procedures that improve the chances of gaining cooperation and commitment to decisions without sacrificing the quality of decisions in the process.

The results indicate strong support for five of the six hypotheses concerning the effects of consideration and influence and weak support for one. Specifically, we found that when team leaders showed strong consideration of members' input, team members saw the process as fairer, and consequently, had greater commitment to the decision, greater attachment to the team, and greater trust in the leader. These effects of consideration on affective responses were found over and above the main effects of influence. We also found that, as hypothesized, the impact of consideration on commitment to a decision was significantly greater when leaders did not allow team members' input to influence their decisions. In addition, we found partial support for the hypotheses predicting that justice perceptions mediate the impact of procedures on commitment, attachment, and trust.

We found weak support for the prediction that the extent to which a leader allowed team members' input to influence a decision would moderate the effect of consideration on perceptions of fairness. This result may indicate that consideration has a relatively unconditional effect on judgments of procedural fairness. Alternatively, it is possible that the weak result reflects the lower power to detect relationships inherent in the nested design.

One unexpected result was that feelings of attachment and trust significantly decreased over time when leaders exhibited no specific signs of consideration of input. This pattern of results may be evidence of the "frustration effect," in which voice in decision making results in resentment rather than acceptance of a decision (Greenberg & Folger, 1983). When a decision maker fails to respond to input, perceptions of unfairness may be more severe than they would be if participants had no voice at all (Greenberg & Folger, 1983). This finding suggests that middle- and upper-level managers may not only appreciate but may expect some degree of consideration for their input. When team members are asked to be involved in strategic decision making, they expect their input to be taken seriously.

Implications for Strategic Decision-Making Research

Previous research on strategic decision making (e.g., Schweiger et al., 1986, 1989) has speculated that engendering positive attitudes in teams toward decisions and other team members is achieved at the expense of decision quality. However, our results indicate that achieving positive affect does not adversely influence the quality of decisions. Here, leaders achieved positive affect through careful consideration of team members' input. The results suggest that leaders may not need to relinquish control over decision quality to gain commitment and subsequent cooperation; they merely have to treat people fairly and with respect. This interpretation is consistent with Eisenhardt's (1989) finding that team members were content to allow a CEO to make strategic decisions as long as they were sure that their views were known and considered. Although the subjects of this research were middle- and upper-level managers, the findings are potentially applicable to CEOs or leaders of top management teams who daily face the kinds of tasks and challenges studied here.

This study also helps explain why, as Woolridge and Floyd noted (1990: 239), involvement in strategic decisions by itself is insufficient to create commitment and cooperation. Leaders who include individuals on a management team merely because it is the politically wise thing to do—rather than because they sincerely want their input—may be undermining rather than improving their chances of garnering necessary support and effective implementation. Nonetheless, our findings suggest that by overtly showing consideration in the strategic decision-making process, leaders can achieve support for initiatives even if they do not attempt to compromise to meet the interests of all constituencies. Thus, they may be able to expand the range of the implementable (Guth & MacMillan, 1986). Such latitude may prove to be a significant strategic advantage over less effectively run firms.

Finally, this study supports the position that leadership may be particularly important to effective strategic decision-making processes (Eisenhardt & Bourgeois, 1988; Thomas, 1988). The results show that how leaders interacted with team members during decision making had a significant impact on several dimensions potentially critical to future cooperation. The findings not only indicate the importance of a decision maker's conduct toward

team members, but also illustrate the ease with which managers can be trained to be considerate. The effect of consideration was achieved by providing team leaders with simple instructions on how to evaluate and respond to member input. Thus, enhancing the fairness of decision-making procedures does not require any special interpersonal skills. However, leaders' ability to generate feelings conducive to information sharing and cooperation both horizontally across functions and vertically across levels may yield a competitive advantage for an organization.

Implications for Procedural Justice Research

These findings also contribute to our understanding of the function of procedural justice in decision making. First, the success of our manipulation of consideration validates and extends previous findings concerning the role of consideration in procedural justice. Because previous studies have assessed the impact of consideration as a measured variable (e.g., Leung & Li, 1990), causal inferences concerning it have been limited, and little is known about how to get decision makers or leaders to act considerately. Guided by Shapiro's findings (1993) concerning what it means to have input considered, the present study provides evidence of the effects of decision makers' consideration of input on affective responses. Further, this study provides a strong test of a basic proposition of the group-value model of procedural justice, that decision-making procedures affirming people's standing in a group produce positive feelings toward the group, leader, and organization (Lind & Taylor, 1988). The finding that, independent of the opportunity to influence the leader, consideration of input changed these attitudes shows that group members placed significant value on their group standing. However, the effect of consideration on decision quality is unclear. Although the results show that influence has a positive impact on decision quality, the high mean scores that accompanied high influence might have prevented us from detecting a positive impact of consideration on decision quality.

Limitations and Future Directions

Future research could benefit from identifying the major limitations of this study. First, the teams worked on written cases in a training setting rather than on the actual strategic decisions they were facing. Moreover, although the present study demonstrated that leaders are capable of giving consideration to member input, it is unclear whether or when leaders are willing to act in this manner. Further, although we used a repeated-measures design, the relatively brief time frame of the study limited our ability to draw definitive conclusions about the extent to which observed changes in attitudes would persist. Finally, because we used intact teams, random assignment to conditions occurred only at the team level, placing limits on causal inferences made on individual-level outcomes. However, we specifically chose to study intact teams in order to test the power of fairness procedures in the most stringent of contexts, one in which there already existed a history, values, and norms.

Future research should address the following issues. First, researchers should continue to examine the links between procedures, fairness perceptions, affective responses, and cooperative behavior. Second, researchers should examine the role of fairness in decision implementation. Factors such as the degree to which decisions can be corrected or modified may also affect fairness judgments (Sheppard & Lewicki, 1987). Third, future research should assess the extent to which leaders are willing to behave fairly and factors that may inhibit the application of fair procedures in strategic decision making. Fourth, to more fully test whether fair procedures are still effective under conditions of high conflict, researchers should attempt to integrate fair procedures with decision-making procedures designed to enhance decision quality. Fifth, fairness concerns should be examined in situations in which a team leader plays a less directive role in the decision-making process than the leaders did here. The way in which members respond to one another may be also important to building commitment to a decision, particularly when there is diversity of opinion. Training team members as well as team leaders to show consideration of input may prove fruitful in such cases. Finally, future research on fairness in group decision making should address group-related factors, such as opinion diversity (Greenberg & Folger, 1983) and group status (Lind & Tyler, 1988), that are likely to moderate the impact of procedures on perceptions and attitudes.

In conclusion, this study reinforces the call for and the potential fruitfulness of further investigation into the dynamics of strategic decision-making processes. It especially calls attention to the need to understand the determinants of and consequences of affective or emotional elements in strategic decision making (Eisenhardt, 1989; Kim & Mauborgne, 1993; Schweiger et al., 1989). As did Kim and Mauborgne, we demonstrate the usefulness of applications of procedural justice theory to understanding strategic decision making and its potential to inform efforts to improve strategic decision-making practice. This is the first study to specify procedural elements that will enhance affective responses to strategic decision making important to cooperative team relations without compromising the quality of decisions.

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APPENDIX Manipulation Scripts

After working individually on the case, each team leader received one of the following sets of instructions, with the choice depending upon the condition to which they were assigned.

Low Consideration-Low Influence

"Now you will get back together with your group and listen to their presentations. We want you to use a structured approach. First, have each member present his or her view of the case, allowing about 10 minutes per presentation. Do not allow any interruptions or evaluations of the presentations. Even you should not comment or question the presentation, just allow them to speak. That way, everyone will get a chance to state his or her own case free from criticism. Do not present your views at this time or comment on anyone else's views. This is just a time to gather information, not evaluate it."

"After everyone has spoken, you will privately evaluate members' assumptions and recommendations. Compare each member's assumptions and recommendations with your own and look for commonalities. Make a note when you see commonalities between your own recommendations and assumptions and your team members. Do this for each member of your team. Try to come up with some comments relating to each member's recommendations."

"After you have evaluated all of your members' answers, you will go back to the group to present the recommendations that you developed prior to examining theirs. Read your recommendations to the group. Do not change from your initial recommendations. Do not discuss your evaluations of the group's recommendations at this point."

High Consideration-Low Influence

"Now you will get back together with your group and listen to their presentations. We want you to use a structured approach that will help you get quality information from your team members. First, have each member present his or her view of the case, allowing about 10

minutes per presentation. Do not allow any interruptions or evaluations of the presentations. Even you should not comment or question the presentation, just allow them to speak. That way, everyone will get a chance to state his or her own case free from criticism. While you listen to these presentations, take notes of the key recommendations and any questions you have. After each presentation, restate the team member's recommendations in your own words to make sure you understood what the presenter said. This technique is called reflection and is a way to minimize miscommunications. Ask any questions to clarify what the member said, but do not evaluate or critique his or her ideas. Do not present your views at this time. This is just a time to gather information, not evaluate it.

"After everyone has spoken, you will privately evaluate members' assumptions and recommendations. Compare each member's assumptions and recommendations with your own and look for commonalities. Make a note when you see commonalities between your own recommendations and assumptions and your team members. Do this for each member of your team. Try to come up with some comments relating to each member's recommendations.

"After you have evaluated all of your members' answers, you will go back to the group to present the recommendations that you developed prior to examining theirs. Read your recommendations to the group. Do not change from your initial recommendations. After you've read your recommendations, discuss the commonalities between yours and theirs. Address each team member specifically and identify something particular to each member's recommendations. Be specific and focus only on commonalities, not differences."

Low Consideration-High Influence

"Now you will get back together with your group and listen to their presentations. We want you to use a structured approach. First, have each member present his or her view of the case, allowing about 10 minutes per presentation. Do not allow any interruptions or evaluations of the presentations. Even you should not comment or question the presentation, just allow them to speak. That way, everyone will get a chance to state his or her own case free from criticism. Do not present your views at this time or comment on anyone else's views. This is just a time to gather information, not evaluate it.

"After everyone has spoken, you will privately evaluate members' assumptions and recommendations. Compare each member's assumptions and recommendations with your own and look for commonalities. Make a note when you see commonalities between your own recommendations and assumptions and your team members. Do this for each member of your team. Try to come up with some comments relating to each member's recommendations.

"Next, revise your assumptions and recommendations to incorporate important points made by your team members. After you have evaluated all of your members' answers, you will go back to the group to present your revised recommendations. Read your revised recommendations to the group. Do not discuss your evaluations of the group's recommendations at this point."

High Consideration-High Influence

"Now you will get back together with your group and listen to their presentations. We want you to use a structured approach that will help you get quality information from your team members. First, have each member present his or her view of the case, allowing about 10 minutes per presentation. Do not allow any interruptions or evaluations of the presentations. Even you should not comment or question the presentation, just allow them to speak. That way, everyone will get a chance to state his or her own case free from criticism. While you listen to these presentations, take notes of the key recommendations and any questions you have. After each presentation, restate members' recommendations in your own words to make sure you understood what the presenter said. This technique is called reflection and is a way to minimize miscommunications. Ask any questions to clarify what the member said, but do not evaluate or critique his or her ideas. Do not present your views at this time. This is just a time to gather information, not evaluate it.

"After everyone has spoken, you will privately evaluate your team members' assumptions

and recommendations. Compare each member's assumptions and recommendations with your own and look for commonalities. Make a note when you see commonalities between your own recommendations and assumptions and your team members. Do this for each member of your team. Try to come up with some comments relating to each member's recommendations.

"Next, revise your assumptions and recommendations to incorporate important points made by your team members. After you have evaluated all of your members' answers, you will go back to the group to present your revised recommendations. Read your revised recommendations to the group. After you've read your recommendations, discuss the commonalities between yours and theirs. Address each member specifically and identify something particular to each member's recommendations. Be specific and focus only on commonalities, not differences."

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DOES FAMILIARITY BREED TRUST? THE IMPLICATIONS OF REPEATED TIES FOR CONTRACTUAL CHOICE IN ALLIANCES

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Exploring the factors that explain the choice of governance structures in interfirm alliances, this study challenges the use of a singular emphasis on transaction costs. Such an approach erroneously treats each transaction as independent and ignores the role of interfirm trust that emerges from repeated alliances between the same partners. Comprehensive multiindustry data on alliances made between 1970 and 1989 support the importance of such trust. Although support emerged for the transaction cost claim that alliances that encompass shared research and development are likely to be equity based, there is also strong evidence that repeated alliances between two partners are less likely than other alliances to be organized using equity.

In the last two decades, a number of environmental shifts have led to new opportunities for interfirm cooperation—the globalization of markets, the convergence of and rapid shifts in technologies, the rise of Japan and Europe as technologically advanced economies, and regulatory changes within the United States. Perhaps the most significant manifestation of this rise in interorganizational cooperation has been the dramatic increase in interfirm strategic alliances. Such alliances encompass a variety of agreements whereby two or more firms agree to pool their resources to pursue specific market opportunities. These agreements include joint ventures, joint R&D agreements, technology exchange, direct investment, licensing, and a host of other arrangements. Many empirical studies have documented the dramatic growth of such alliances in numerous industrial sectors, the multitude of reasons why firms have entered into such partnerships, and the wide variety of contractual arrangements firms use to formalize their alliances (Contractor & Lorance, 1988; Harrigan, 1986, 1989; Hergert & Morris, 1988; Hladik, 1985).

Economists and management theorists have become concerned in recent years with the contractual, or governance, structures used in alliances and most have adopted a theoretical stance informed by transaction cost eco-

I would like to thank Robert Burgelman, Gerald Davis, Benjamin Gomes-Casseres, Mark Granovetter, Sachin Gupta, Paul Hirsch, Paul Lawrence, Mark Mizruchi, Nitin Nohria, Peter Ring, Aage Sorensen, Brian Uzzi, and Edward Zajac for helpful comments on various drafts of this article. Thanks also to the two anonymous reviewers for detailed suggestions on revision.

nomics (cf. Hennart, 1988; Pisano, 1989; Pisano, Russo, & Teece, 1988). Transaction cost theorists argue that anticipated transaction costs determine the type of contract used in an alliance. Transaction costs, which typically arise out of concerns about opportunistic behavior on the part of one or more of a set of partners, include the costs of negotiating and writing contingent contracts, monitoring contractual performance, enforcing contractual promises, and addressing breaches of contractual promises (Joskow, 1985: 36).

Much of the prior empirical research on transaction cost economics has examined the choice companies make between vertical integration and arm's-length market transactions, also called the make-or-buy decision (Balakrishnan & Wernerfelt, 1986; Masten, 1984; Monteverde & Teece, 1982; Walker & Weber, 1984). In these instances, treating each transaction as discrete is justifiable since the repeated making of ties between the same two partners is rare. However, two firms may enter multiple strategic alliances with each other over several years. Empirical studies on the governance of alliances have unfortunately continued in the transaction cost economics tradition, treating each alliance as independent and considering the activities it includes as singularly reflecting the transaction costs associated with it. The approach taken is thus static; it ignores the possibility of repeated alliances and the emergent processes resulting from prior interactions between partners that may alter their calculus when they are choosing contracts in alliances (Ring & Van de Ven, 1992; Zajac & Olsen, 1993).

By ignoring the fact that firms may enter multiple alliances with each other over time, empirical work informed by transaction cost economics precludes the possibility that an important economic and social context may alter the formal structure of those alliances and the transaction costs associated with them. This omission is significant because experience can engender trust among partners, and trust can limit the transaction costs associated with their future alliances (Granovetter, 1985, 1992; Marsden, 1981). Early theorizing within transaction cost economics highlighted such facets (Commons, 1970; Williamson, 1975), but subsequent researchers in this stream have not systematically examined them.

This article draws on both transaction cost economics and sociological theory to examine the factors that explain the choice of governance structure in individual alliances. The social context of alliances, viewed here as emerging over time, can only be observed by examining firms' relationships over time. Thus, I tested predictions with comprehensive data on alliances formed between 1970 and 1989 in the biopharmaceutical, new materials, and automotive economic sectors by American, European, and Japanese firms. I defined an alliance as any independently initiated interfirm link that involves exchange, sharing, or co-development. This definition, which excludes one-time marketing promotions, transient distribution agreements, technology purchase agreements, and state-supported R&D programs such as SEMATECH, a semiconductor industry consortium, the Microelectronics Computer Corporation, and ESPRIT, a European Community-supported

subsidy program, is consistent with many prior empirical approaches to the study of alliances (Harrigan, 1986; Hergert & Morris, 1988; Hladik, 1985; Parkhe, 1993).

TRANSACTION COSTS AND THE GOVERNANCE OF ALLIANCES

According to transaction cost economics, in a world without transaction costs all activities would be carried out as exchanges between units, and it is due to the failure of markets, or arenas of exchange, to allow for many exchanges without prohibitively high governance costs that organizations come to exist (Williamson, 1985, 1991). In other words, hierarchical organization is considered a response to market failure. Transaction cost economics is not only concerned with the emergence of organizations per se to manage transaction costs, but also with how the choice of organizational form may vary according to the specific types of exchange activities encompassed. Thus, a second-order question examined is, how can existing exchange relations be structured to economize on transaction costs? In this context, the application of transaction cost economics to the formation of alliances is most apparent. Since alliances blend elements of the two extremes of market and hierarchy, it follows that firms would enter such arrangements when the transaction costs associated with an exchange are intermediate and not high enough to justify vertical integration (Bradach & Eccles, 1989; Eccles, 1981; Williamson, 1985).

A similar logic can be applied to draw even finer distinctions about the type of contract used in those intermediate instances in which transaction cost considerations mandate alliances. The contract used for an alliance will be closer to either the market or the hierarchy extreme, depending on the magnitude of the transaction costs: the greater the transaction costs, the more hierarchical the contract (Pisano, 1989; Pisano et al., 1988). The possibility of opportunistic behavior by a partner generates the most salient transaction costs in the alliance context. Additional costs result from making alliance-specific investments and from any uncertainty associated with the partnership itself.

The specific governance structure of alliances is important for a number of reasons. First, a contract is an important mechanism by which firms protect themselves from a partner's opportunism. Evidence suggests that firms entering alliances are potentially vulnerable to the opportunistic behavior of their partners (Business Week, 1986; Doz, Hamel, & Prahalad, 1989; Kogut, 1988, 1989; Reich & Mankin, 1986). In the face of the hazards associated with alliances, the contracts used reflect the risks the partners see (Ring & Van de Ven, 1992).

Second, a contractual agreement serves as a framework within which cooperation between partners proceeds. Although alliance partners may not follow their initial contract to the letter, it provides a set of normative guidelines: "The major importance of a legal contract is to provide a framework

... a framework highly adjustable, a framework which almost never accurately indicates real working relations, but which affords a rough indication around which such relations vary, an occasional guide in case of doubt, and a norm of ultimate appeal when the relations cease in fact to work" (Llewellyn, 1931: 736-737).

Third, the recent availability of an array of innovative contractual arrangements opens up the possibility of new interfirm cooperative agreements. The dramatic increase in the use of arm's-length contracts, which don't involve shared ownership, is particularly noteworthy in this respect.

Equity and Nonequity Alliances

Transaction cost economists have classified the governance structures of alliances in terms of their use of equity ownership (Pisano, 1989; Pisano et al., 1988). Equity alliances, as defined by transaction cost economists, take one of two forms (Pisano, 1989). They can either be organized as an equity joint venture, which involves the creation of a new and independent jointly owned entity, or they can come about when one of the partners takes a minority equity position in the other partner or partners. Transaction cost economists justify treating equity joint ventures and minority equity investments as a single category on the grounds that "a direct equity investment by one firm into another essentially creates an equity joint venture between one firm's existing shareholders and the new corporate investor" (Pisano, 1989: 111). In both types, the effective shared equity stakes of the firms vary case by case. The important point is that beyond a certain threshold, the shared ownership structure effectively deters opportunistic behavior.

Equity-based ventures are considered hierarchical to the extent that they more closely replicate some of the features associated with organizational hierarchies than do other alliances. An example of an equity joint venture is CFM International (CFMI), whose partners are the French jet engine manufacturer Société Nationale d'Étude et de Construction de Moteurs d'Aviation (SNECMA) and General Electric. This 50-50 venture, formed in 1971 to produce jet engines for small commercial aircraft, has been eminently successful. According to the original agreement, the partners were to share both ownership and work equally. As is typical of equity joint ventures, CFMI is an entity with its own headquarters, chief executive officer (CEO), board of directors, and staff, members of which come from both companies (Enright, 1992).

Nonequity arrangements in contrast, don't involve the sharing or exchange of equity, nor do they usually entail the creation of a new organizational entity. In the absence of any shared ownership structure, nonequity alliances are more akin to arm's-length market exchanges on the continuum of market to hierarchy. Organization members of the partner firms work together directly from their own organizational confines. Nonequity alliances include unidirectional agreements, such as licensing, second-

sourcing, and distribution agreements, and bidirectional agreements such as joint contracts and technology exchange agreements. Examples of such alliances are some of the partnerships Cadence Technologies, a leader in electronic design automation, has entered over the years with their leading customers, such as Harris, Toshiba, National Semiconductor, Ericksson, Intel, Phillips, IBM, Mitsubishi, Kawasaki Steel, and SGS-Thompson. Within such partnerships, the customers share Cadence's development costs for new products that are especially useful for the former's own purposes. They provide Cadence with financial resources and may maintain engineering staff at Cadence to assist in the ongoing development efforts. Equity is exchanged, and no new organizational entities are created to oversee the partnerships.

From a transaction cost economics standpoint, quasi-market ties like nonequity alliances are the default mode for organizing alliances, and the use of equity must be explained. The explanation offered is that firms use equity alliances when the transaction costs associated with an exchange are too high to justify a quasi-market, nonequity alliance. Researchers have identified two sets of governance properties through which equity alliances effectively alleviate transaction costs (Pisano et al., 1988). The first are the properties of a "mutual hostage" situation in which shared equity helps align the interests of all the partners. Not only are the partners required to make *ex ante* commitments to an equity alliance, but also, their concern for their investment reduces the possibility of their behaving opportunistically over the course of the alliance (Williamson, 1975). In the case of alliances that involve sharing or developing new technologies over which property rights are difficult to enforce, equity ownership also provides an effective means for allocating such resources. For instance, at CFMI, both partners benefit from the increasing value of their equity in the venture. Issues of the ownership of intellectual property developed in the venture are sidestepped as the property belongs to the venture itself.

The second set of properties are those of the administrative hierarchy that not only oversees the day-to-day functioning of an alliance, but also addresses contingencies as they arise. In equity joint ventures, a hierarchy of managers serves this function; in the case of direct equity investments, hierarchical supervision is created when the investing partners participate in the board of directors of the partner that received the investment. For instance, the top management team of the joint venture CFMI includes a CEO, a chief financial officer (CFO), and two vice presidents. Traditionally, the CEO and one vice president have come from SNECMA and the CFO and the other vice president from General Electric. The board of directors, which includes top managers from both partners, ratifies important decisions. This participation is the mechanism by which partners exercise their residual rights of control (Grossman & Hart, 1986).

The benefits of equity alliances must be weighed against their disadvantages. Equity alliances can not only take a long time to negotiate and organize, but can also involve very high exit costs. Furthermore, significant

administrative costs can be associated with the hierarchical supervision they encompass.

The same pros and cons must be assessed for nonequity alliances. They can be negotiated rapidly and require only limited investments from each partner. For instance, the partners at Cadence Technologies can withdraw their investments at short notice if necessary, and Cadence can put together such alliances with other partners relatively quickly. But partners are vulnerable to each other's opportunistic behavior, and one may find it difficult to persuade the other to make significant alliance-specific investments (Joskow, 1985). A further difficulty may arise in alliances formed to share or develop new technologies; here, significant disagreements on the allocation of property rights may arise. Even when there is agreement, it may be difficult to transfer tacit knowledge across loosely connected firms (Badaracco, 1990; Hennart, 1988).¹ Furthermore, such agreements entail a fair amount of management effort; albeit of a different nature than that required in equity alliances.

Following prior research on the governance of alliances, I chose to focus on the dichotomy between equity and nonequity alliances. My central concern was to examine the factors that explain the use of equity in alliances. I looked at equity for numerous reasons. First, its use is a prominent feature that offers a means to distinguish most alliances. Most other classifications are not based on such a readily measured feature, so alliances cannot easily be placed on their proposed scales. Second, the use of equity is an important measure by which partners, especially first-time ones, address their concerns about malfeasance in alliances. My previous fieldwork at firms entering alliances corroborates this practice (Gulati, 1993). Third, prior research by transaction cost economists on these issues has focused on the use of equity, so looking at the dichotomy between equity and nonequity alliances allows the present findings to be compared to those of prior research.

R&D alliances. Firms enter alliances for a wide variety of reasons.² A primary basis from which transaction cost economics has examined the costs associated with alliances has been the activities encompassed by the agreement, for instance, the presence of R&D. Prior research suggests that transactions involving the sharing, exchange, or co-development of knowledge can be somewhat problematic because of the peculiar character of knowledge as a commodity (Arrow, 1974). Many of these problems result from parties' inability to accurately assess the value of the commodity being

¹ Tacit knowledge here refers to knowledge that cannot be made fully explicit and typically resides in patterns of relationships, norms, information flows, ways of making decisions, and other organizational factors.

² Systematic empirical studies have examined some of the economic and technological factors underlying the formation of alliances (Mariti & Smiley, 1983). Some of the typical motivations examined include sharing uncertainty, sharing costs, access to complementary technologies, learning new tacit technologies, reducing innovation period, monitoring environmental changes, entering foreign markets, and expanding product range (Hagedoorn & Schakengaard, 1990).

exchanged as well as from concerns about opportunism resulting from poor monitoring possibilities in such exchanges (Balakrishnan & Koza, 1993). The difficulty of transferring R&D know-how across organizations compounds these problems (Badaracco, 1990; Hennart, 1988). In sum, alliances with an R&D component are likely to have higher transaction costs than those that don't involve joint R&D.

Transaction cost theorists claim that alliances encompassing R&D will most likely be organized as equity-based partnerships because of the significant transaction cost burden. Shared equity can align the interests of partners and limit opportunistic behavior by focusing attention on their equity stake in the alliance. Furthermore, such alliances are usually accompanied by an independent administrative structure, which fosters information flow and provides for ongoing coordination.

In a study of the telecommunications industry, Pisano, Russo, and Teece (1988) explicitly tested the impact of transaction costs on the nature of alliances. They predicted that the greater the hazards associated with an alliance, the more likely it will be equity based, and their findings supported these predictions. Pisano (1989) observed similar results in the biotechnology sector. In both cases, high transaction costs were measured as the presence of an R&D component in the alliance. In a study of U.S.-Japanese alliances, Osborn and Baughn (1990) followed a similar reasoning and also showed that alliances encompassing joint R&D were more likely to be equity based. Thus,

Hypothesis 1: Alliances are more likely to be equity based if they have a shared R&D component.

Unlike transaction costs analyses, the current work treated this hypothesis as a starting point rather than an end point.

THE ROLE OF INTERFIRM TRUST IN ALLIANCES

In recent years, numerous researchers have been critical of transaction cost economics' treatment of each transaction between companies as an independent event (Doz & Prahalad, 1991; Ring & Van de Ven, 1992). This assumption is particularly inappropriate where firms repeatedly enter transactions with each other. Why and how are repeat alliances likely to differ from one-time alliances in governance structure? An important cause and consequence of such repeat alliances among firms is the emergence of interfirm trust, which obliges partners to behave loyally and can play an important role in their choice of governance structure for future alliances with each other. The term trust has widely varying connotations (for excellent reviews on the topic, see Barber [1983], Gambetta [1988], and Luhmann [1979]). In this context, I conceived of trust as "a type of expectation that alleviates the fear that one's exchange partner will act opportunistically" (Bradach & Eccles, 1989: 104). This definition is akin to Simmel's notion of mutual "faithfulness" in social relationships (Simmel, 1978: 379). Gambetta gave this cogent definition of such forms of trust:

Trust . . . is a particular level of the subjective probability with which an agent assesses that another agent or group of agents will perform a particular action both before he can monitor such action . . . and in a context in which it affects his own action. When we say we trust someone or that someone is trustworthy, we implicitly mean that the probability that he will perform an action that is beneficial or at least not detrimental to us is high enough for us to consider engaging in some form of cooperation with him (1988: 217).

Can there be trust between two organizations that are simply agglomerations of individuals. Intuitively, trust is an interpersonal phenomenon. Some sociologists have argued that although expectations of trust do ultimately reside within individuals, it is possible to think of interfirm trust in economic transactions (Zucker, 1986). At the organizational level, observers point to numerous examples of "preferential, stable, obligated, bilateral trading relationships" to illustrate that firms develop close bonds with other firms through recurrent interactions (Sabel, 1991). Recent historical accounts of industrial districts such as the modern woolens center at Prato, Italy, the injection molding center in Oyannax, France, the cutlery industry in Sheffield, England, and the nineteenth-century Swiss watch-making region (Piore & Sabel, 1984; Sabel, 1991; Sabel & Zeitlin, 1985; Weiss, 1984, 1988) support this argument. Similar accounts have been made of subcontracting relations in the Japanese textile industry (Dore, 1983), the French engineering industry (Lorenz, 1988), the American construction industry (Eccles, 1981), and the Italian textile industry (Johnston & Lawrence, 1988). A variety of terms have been used to describe this phenomenon: Williamson (1985) described it as both "relational contracting" and "obligational contracting"; Eccles (1981) as "quasi-firm arrangements"; Johnston and Lawrence (1988) as "value-added partnerships"; Dore (1983) as "obligated relational contracting"; and Zucker (1986) as "process-based trust." Underlying all these accounts is a single notion: interfirm trust is incrementally built as firms repeatedly interact (Good, 1988).

The idea of trust emerging from prior contact is based on the premise that through ongoing interaction, firms learn about each other and develop trust around norms of equity, or "knowledge-based trust" (Shapiro, Sheppard, & Cheraskin, 1992). There are strong cognitive and emotional bases for such trust, which are perhaps most visible among individual organization members (Lewis & Weigert, 1985). Macaulay, in a seminal essay, observed how close personal ties emerged between individuals in organizations that contracted with each other; these personal relationships in turn "exert pressures for conformity to expectations" (Macaulay, 1963: 63). Palay (1985) similarly found that the relationships between rail-freight carriers and auto shippers were overlaid with close personal connections among members of those organizations. He described how these overlapping relationships were an important factor in their use of informal contracts in a situation that would otherwise have demanded a detailed, formal contract because of high trans-

action costs. Kanter and Myers (1989) pointed out that interpersonal ties across organizations with alliances increase over time. Similarly, Ring and Van de Ven (1989) pointed to the important role of informal, personal connections across organizations in determining the governance structures used to organize their transactions.

How is trust between firms likely to alter their choice of contracts in subsequent alliances? Perhaps the biggest concern of firms entering alliances is the predictability of their partners' behavior. A detailed contract is one mechanism for making behavior predictable, and another is trust. Where there is trust, people may not choose to rely upon detailed contracts to ensure predictability. Indeed, as Macaulay observed: "Detailed negotiated contracts can get in the way of creating good exchange relationships between business units" (1963: 64).

Entertaining the possibility of trust between alliance partners emerging from prior ties clearly alters assessments of the transaction costs associated with specific alliances. Trust counteracts fear of opportunistic behavior and as a result, is likely to limit the transaction costs associated with an exchange. This process in turn should affect the governance structure of the alliance. In other words, trust can substitute for hierarchical contracts in many exchanges and serve as an alternative control mechanism (Bradach & Eccles, 1989).

It is important to distinguish knowledge-based trust just discussed from deterrence-based trust, which also plays a role in repeat alliances (Ring & Van de Ven, 1989; Shapiro et al., 1992). The latter emphasizes utilitarian considerations that may also lead to believing that a partner will behave in a trustworthy manner. Specifically, trust can arise when untrustworthy behavior by a partner can lead to costly sanctions that exceed any potential benefits that opportunistic behavior may provide. Some potential sanctions are loss of repeat business with the same partner, loss of other points of interaction between the two firms, and loss of reputation (Granovetter, 1985; Macaulay, 1963; Maitland, Bryson, & Van de Ven, 1985: 63). Thus, on strictly utilitarian grounds it is to the firm's benefit to behave in a trustworthy manner.³

How significant might the role of such deterrent sanctions be in the case of interfirm alliances? Recent research on alliances suggests that most firms are embedded in a social network of prior alliances through which they are connected with one another either directly or indirectly (Kogut, Shan, & Walker, 1993; Powell & Brantley, 1993). Within such a dense social network, reputational considerations should play an important role in each firm's potential for future alliances. Furthermore, as this article shows, many firms

³ In recent years there has been some debate on whether behavior with utilitarian motivations can really be described as trust (Uzzi, 1993; Williamson, 1993). For my purposes, interfirm trust encompasses such utilitarian behavior, and I choose not to engage in this debate.

do engage in repeat alliances with each other, suggesting that there are always prospects for future partnerships among presently allied firms.

Trust itself can be difficult to observe and measure. It has a taken-for-granted character since it is so closely linked to fundamental social norms and customs. Following prior research, I chose to use a factor that likely produces trust as its proxy (Zucker, 1986)—prior alliances between firms. This substitution is based on the intuition that two firms with prior alliances are likely to trust each other more than other firms with whom they have had no alliances (Ring & Van de Ven, 1989).⁴ Other theorists have made similar claims about the role of repeat alliances. In a survey-based empirical study, Parkhe (1993) observed that the presence of a prior history of cooperation between two firms limited their perception of expected opportunistic behavior in new alliances and as a result lowered the level of contractual safeguards employed in those alliances. Drawing on an inductive field study at seven pairs of firms in alliances, Larson (1992) observed that firms not only rely extensively upon mechanisms of social control, as opposed to formal contracts, in the formation and maintenance of alliances, but that such relational factors become increasingly important as the relationships between firms develop over time.

The operational proposition examined here is that firms are less likely to use equity in repeated alliances than in a first-time alliance since interfirm trust based on prior alliances reduces the imperative to use equity. Actors are thus willing to take what Williamson (1993) calls "calculative risks" because of their confident expectation that their counterparts will act responsibly. Thus:

Hypothesis 2: The greater the number of previous alliances between the partners in an alliance, the less likely the alliance is to be equity based.

A further question remains as to whether the character of the previous alliances affects the type of new alliance used. It could be that two firms will prefer a nonequity alliance only when they already have an equity alliance in place. According to such a logic, an equity alliance creates a hostage situation by requiring *ex ante* commitments by the partners and engendering partners' concern for the value of their investments. Once two firms share one hostage it obviates the need for additional hostages. This is similar to what Williamson (1983) described as "credible commitments." A singular focus on this hostage-taking character is, however, overly narrow. As high-

⁴ Firms can be connected with other firms through a wide array of social and economic relationships. These include supplier relationships, trade association memberships, interlocking directorates, relationships amongst individual employees, and alliances. All these can be important sources of information that leads to trust. Indeed, prior research has shown that a variety of interorganizational contacts serve as conduits for both technological and social information about organizational activities (Baker, 1990; Davis, 1991). Because of limitations in the scope of this study, I focused on a single source of social connections among firms, prior alliances.

lighted earlier, prior equity alliances are more than simple hostages. They entail close interactions between the partners over prolonged periods of time, all of which can enhance trust through mutual awareness. As a senior manager whom I interviewed at a computer software firm said,

Our technology partnerships are organized as detailed equity-based contracts. . . . These in turn have led to numerous repeated alliances with the same set of firms. . . . In our subsequent alliances we don't bother to write detailed contracts. That would not only be tedious but also an insult to our relationship. Sometimes we give our lawyers only a few days to write up the contract, and that too after the project may already have begun.

Such behavior could be a result of having a hostage in the form of an equity alliance already in place. However, informants also reported that the logic behind their use of loose contracts was not so much the existing equity alliance, but their familiarity with their partners and judgment that they were trustworthy (Gulati, 1993).

An alternative to the above scenario is that two firms will prefer a nonequity alliance even when they only have a prior nonequity tie that may be easy to dissolve but also enhances mutual awareness.⁵ This effect is likely to be less significant than that arising from the presence of prior equity alliances, which not only create shared hostages but may lead to closer interaction among partners. Thus,

Hypothesis 3a: The greater the number of previous equity alliances between the partners in an alliance, the less likely an alliance is to be equity based.

Hypothesis 3b: The greater the number of previous non-equity alliances between the partners in an alliance, the less likely the alliance is to be equity based.

Looking beyond the history of alliances between given firms, I also expected firms to trust domestic partners more than international partners, not only because more and better information is available about domestic firms, but also because the reputational consequences of opportunistic behavior are greater in a domestic context (Gerlach, 1990). "Character-based trust," whereby firms trust others that are socially similar to themselves, may also be an issue (Zucker, 1986). Given such trust, I expected firms to be more willing to engage in loose, quasi-market alliances with domestic partners than with international partners.

Hypothesis 4: Alliances are more likely to be equity based if they are among firms of different nations.

⁵ Of course, nonequity alliances, even if they can be easily dissolved, can be very important strategically and thus can still serve as important hostages.

Alliances can be between two or more partners. Research on group behavior suggests that beyond a certain threshold, an increase in the number of participants in any group can lead to dysfunctional behavior within the group and to a decline in its ability to perform assigned tasks (Hackman, 1987; Steiner, 1972). Within alliances, the presence of more than two partners heightens the possibility of stalemates and conflicts. Inasmuch as multilateral alliances pose larger organizational problems than bilateral alliances, I expected them to more likely be equity based.

Hypothesis 5: Alliances are more likely to be equity based if they are among more than two firms.

METHODS

Sample

The unit of analysis here was the transaction. My data set included information on all publicly announced alliances in the period 1970–89 in the biopharmaceuticals, new materials, and automotive economic sectors. The biopharmaceutical sector includes applications in therapeutics, vaccines, and diagnostics. The new materials sector includes metals, ceramics, polymers, and composites. The automotive sector includes both manufacturers of finished automobiles and their suppliers.

More than half the data came from the Cooperative Agreements and Technology Indicators (CATI) database, collected by researchers at the Maastricht Economic Research Institute on Innovation and Technology (MERIT) at the University of Limburg. Unlike data on alliances drawn solely from announcements in popular business periodicals like the *Wall Street Journal*, the CATI data were collected by examining technical journals, books, and business periodicals for various sectors. I collected the remainder of the alliance data used here from numerous sources, including industry reports, industry-specific articles reporting alliances, and materials from industry consultants. For the automotive industry, the sources I consulted included *Automotive News*, *Ward's Automotive Reports*, *U.S. Auto Industry Report*, *Motor Industry of Japan*, and the *Japanese Auto Manufacturers Forum*; for the biopharmaceutical sector, *Bioscan*, *Ernst & Young Reports*, and the *Biotechnology Directory*; for the new materials sector, *Office of Technology Assessment reports* and *Organization for Economic Cooperation and Development reports*; and for all sectors, *Predicast's F & S Index of Corporate Change*.

The goal of the data collection was to comprehensively cover all alliances formed within the selected industries. I placed no restrictions on the sizes of the partners in the alliances, including both large and small firms. Only alliances that had actually been formed were recorded. The complete data set includes information on over 2,400 alliances formed by American, European, and Japanese firms. To my knowledge, it is the most comprehensive dataset available.

sive data set on alliances within each of the focal sectors, both in terms of the length of time included and the depth of coverage.⁶

The data segment acquired from MERIT coded information on the form of an alliance (equity based or not) and the activities it encompassed. This was based upon precise criteria used to draw assessments from the public announcement of the alliance. In coding the remainder of the data that I collected, I was consistent with the coding scheme outlined by MERIT. Furthermore, I assessed the reliability of the coding criteria by asking two academic experts on strategic alliances to code a random sample of 25 alliances using the information I had collected. There was complete coincidence in their coding and my own.

An alliance was labeled as including R&D only if a public announcement clearly stated that the agreement encompassed joint product development or basic R&D. Similarly, an alliance was coded as equity based when a public announcement said that an equity joint venture had been created or that a firm had taken a substantive minority position in another with the intent of pursuing joint projects.

Fortunately, most public announcements of alliances report detailed information on their governance structures, activities, and goals. When activities or governance structure were ambiguous, I tried to identify additional public records that more clearly stated the goals of a partnership. For over 30 percent of the alliance records that I collected, I consulted multiple sources.

The period of this study, 1970–89, was a potential source of bias, but there were strong reasons for choosing it. First, the growth of alliances in these years was unprecedently high (Anderson, 1990; Hagedoorn & Schakenraad, 1990), but little previous research on alliances has encompassed longitudinal data covering such an extensive time period. Inasmuch as the growth of alliances in this period represents current trends in alliances, the present findings should continue to be relevant to the contemporary formation of alliances.

A second possible limitation of the sampling design was that the data encompass only three industries. I exercised caution in interpreting results obtained with the pooled sample of data from all three industries, including dummy variables for each sector. Furthermore, I reestimated the models for each sector separately to ensure that the postulated effects held within each industry. Although these industries represent a broad spectrum in terms of stage of maturity, a legitimate remaining concern is that the findings reported here may be idiosyncratic to the industries included.

⁶ The number of alliances examined here far exceeds the numbers examined in previous studies: Nohria and Garcia-Pont (1991) reported 96 automotive sector alliances for the period 1980–89 versus the 493 reported here; and Pisano (1989) reported 195 biopharmaceuticals alliances, versus the 781 reported here.

Dependent Variable

The dependent variable, mode of alliance, was coded "1" if an alliance involved the use of equity and "0" if it did not. The fundamental characteristic that distinguishes equity alliances from nonequity alliances is that equity sharing creates shared ownership and is, beyond a minimum threshold, effective in reducing exposure to opportunistic behavior.

Independent Variables

Table 1 describes the variables included in the analysis and summarizes arguments made in this article in the predicted signs.

For consistency with prior empirical research, I defined high transaction costs as the presence of an R&D component in an alliance (1 = R&D present, 0 = no R&D). R&D alliances included those that encompassed basic R&D, product development, or elements of both. Non-R&D alliances typically were those that involved joint production or marketing.

Hypothesis 2 concerns the relationship between the type of alliance

TABLE 1
Definitions and Predicted Signs of Variables

Variable	Definition	Prediction
Mode	Dummy variable indicating if alliance was equity based	Dependent variable
R&D component	Dummy variable indicating presence of an R&D component in the alliance	+
Repeated ties	Number of prior alliances between the firms	-
International alliance	Set to one if the firms are of differing nationalities (default domestic)	+
Multilateral alliance	Set to one if the alliance has more than two partners (default bilateral)	+
Repeated equity ties	Number of prior equity alliances between the firms (in the presence or absence of any nonequity alliances)	-
Repeated nonequity ties	Number of prior nonequity alliances between the firms (in the absence of any equity alliances)	-
New materials sector	Set to one if firms are in the new materials sector (default biopharmaceutical)	No prediction
Automotive sector	Set to one if firms are in the automotive sector (default biopharmaceutical)	No prediction
Year	A year value for each record ranging from 1 to 19	No prediction
Percentage of equity alliances	Percentage of equity alliances announced in the industry in the prior year	+

between given partners and the history of alliances between them. The variable repeated ties recorded the number of prior alliances two firms had had since 1970 (0 = first-time alliance). I also calculated the variables repeated equity ties and repeated nonequity ties, respectively indicating the number of prior equity and nonequity alliances between two parties. These variables also took a zero value for a first-time alliance of the given type.

An important clarification is necessary at this point. Three alternative scenarios are possible in the history of alliances between two firms. The two could have entered (1) only nonequity alliances in the past, or (2) only equity alliances, or (3) both equity and nonequity alliances. To which category should the third scenario be assigned? Since Hypothesis 3a predicts the role of prior equity ties, in the presence or absence of other nonequity ties, repeated equity includes both the situation in which there are only prior equity alliances and that in which there have been mixed alliances. Hypotheses 3b, on the other hand, focuses on the effect of prior nonequity alliances in the absence of any other ties. Hence, repeated nonequity ties does not include situations with mixed alliances.

I included a dummy variable indicating whether an alliance was domestic or international (1 = partners of differing nationalities, 0 = partners of the same nationality).

To capture any effects that arose from the number of partners in an alliance, I computed that number. Since the alliances in the sample were either bilateral or trilateral, this variable was recoded as a dummy variable with a value of "1" if an alliance was multilateral and a value of "0" if an alliance was bilateral.

Statistical Model

A "logit" model was used to assess the effects of the independent variables on the likelihood of an alliance being equity based (Aldrich & Nelson, 1984). The general specification of the model used was as follows: $\log[P(M_i = 1)/(1 - P(M_i = 1))] = A_0 + B_1(X_i)$, where $P(M_i = 1)$ is the probability that alliance i is equity based and X_i is the vector of independent variables. A variable's positive coefficient indicates its propensity to promote equity alliances.

Controls

I included two control variables to represent the three sectors studied. One dummy variable was coded "1" if an alliance was in the new materials sector, "0" otherwise, and the second was coded "1" if the alliance was in the automotive sector and "0" otherwise. The default sector was biopharmaceuticals.

A control variable assessing the relationship of equity alliance formation to the percentage of equity alliances announced in an industry was also included. I counted the number of alliances announced in an industry in the year prior and computed the percentage of those that were equity based. In a limited way, this variable tested the institutionalist claim that firms mimic

TABLE 2
Descriptive Statistics and Correlations

Variables	Frequency*														
	0	1	Means	s.d.	Minimum	Maximum	1	2	3	4	5	6	7	8	9
1. Mode component	840	1,577	0.65	0.47	0	1									
2. R&D															
3. Repeated ties	1,015	1,402	0.58	0.49	0	1	.17								
4. International alliance															
5. Multilateral alliance	1,322	1,095	0.45	0.49	0	1	.02	-.19							
6. Repeated equity ties															
7. Repeated nonequity ties	1,756	661	0.27	0.45	0	1	.05	.07	.06	-.22					
8. New materials sector															
9. Automotive sector	1,274	1,143	0.47	0.49	0	1	.05	-.04	-.13	-.09	.28	-.13	-.04		
10. Year	1,924	493	0.20	0.40	0	1	.06	-.15	.09	.06	.01	.07	.00	.48	
11. Percentage of equity alliances															
	14.50	3.62	1	19			-.08	.00	.08	.02	.06	.05	.03	.07	-.16
	0.35	0.15	0.13		1.00		.10	-.06	-.02	.00	.03	-.01	.14	.15	-.35

* Where no figure is given, value is a count. Totals = 2,417 except for the percentage of equity alliances, for which it is 2,395.

the contracts other firms in their industry use. This variable can also be interpreted as capturing the net effect of the various macroeconomic factors within an industry that may influence the formation of equity alliances (Amburgey & Miner, 1992).

Finally, I included a dummy variable for each year to capture temporal effects and also control for any temporal autocorrelation.

RESULTS

Table 2 presents descriptive statistics and correlations for all variables. The data presented in this table point to the diversity of alliances included in the pooled sample, in which over 500 of the approximately 2,400 alliances were repeat links between firms.

The correlations show a few problems of multicollinearity. Notably, repeated equity ties is highly correlated with repeated ties ($r > .70$); the high correlation is no surprise since repeated equity ties is a nested subset of repeated ties. Because of the collinearity, I introduced these variables separately in the logit analysis.

Table 3 presents the logistic regression estimates. The first column reports the base model including all the control variables. The coefficients for the sector variables were significant ($p < .01$) in all cases. Although this finding suggests intrinsic industry differences in the likelihood that equity-based alliances will be used (the constant terms for each of the industries differ), it does not reveal whether or not the main effects hypothesized differ across the three industries. More specifically, the positive signs indicate that both the automotive and new materials sectors were more likely to have equity-based alliances than the biopharmaceutical sector, once independent variables included in each model were controlled. I later estimated unrestricted models for each of the industries (these results are not presented here). The signs of the coefficients indicated that the postulated directions of the main effects were indeed observed in each sector.

My original estimations included a dummy variable for each year. For simplicity of presentation, I reestimated the models using a single variable, year, which ranges in value from 1 to 19, indicating each year. No differences in results for the other independent variables were observed in these two sets of estimates, and the results are mixed for year, which is significant in some models and not in others.

The positive and significant coefficient ($p < .01$) for the percentage of equity-based alliances announced in an industry in a given year suggests that this variable positively affects the use of equity alliances by firms in the industry in the subsequent year. This finding holds true in the remaining models as well and suggests that the form of contracts used in alliances may be linked to an industry's propensity to use equity alliances.

The second column in Table 3 shows results with the measure of transaction costs introduced into the model. The results are consistent with Hypothesis 1: alliances involving R&D are more likely to be equity based than are non-R&D alliances, a relationship indicated by the positive coefficients

TABLE 3
Results of Logistic Regression Analysis^a

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	-0.83** (0.26)	-1.55** (0.27)	-1.53** (0.28)	-1.66** (0.28)	-1.66** (0.28)
R&D component		0.90** (0.09)	0.99** (0.09)	0.99** (0.09)	0.99** (0.09)
Repeated ties			-0.23** (0.05)		
International alliance				0.33** (0.09)	0.32** (0.09)
Multilateral alliance				0.12 (0.11)	0.15 (0.11)
Repeated equity ties					-0.97** (0.13)
Repeated nonequity ties					
New materials sector	0.36** (0.10)	0.50** (0.11)	0.47** (0.12)	0.41** (0.12)	0.41** (0.12)
Automotive sector	0.42** (0.13)	0.67** (0.13)	0.69** (0.14)	0.88** (0.14)	0.68** (0.14)
Year	-0.03* (0.01)	-0.03* (0.01)	-0.02 (0.01)	-0.02 (0.01)	-0.02 (0.01)
Percentage of equity alliances	0.90** (0.30)	0.99** (0.31)	1.03** (0.31)	1.08** (0.32)	1.08** (0.32)
N	2,395	2,395	2,395	2,395	2,395
-2 log likelihood	3,041.74	2,946.79	2,915.02	2,875.03	2,874.93
χ^2	45.37**	140.31**	172.09**	212.08**	212.18**
df	4	5	8	8	9

^a Standard errors are in parentheses.

* $p < .05$

** $p < .01$

of the variable R&D component ($p < .01$). This finding remains true in later models as well.

The third column shows results with the three measures of trust: the number of prior alliances by the same pair of firms, whether they were domestic or international, and the number of partners involved. Results suggest that the repetition of ties is a significant determinant of mode of alliance ($p < .01$). Specifically, the negative coefficient of the dummy variable repeated ties supports Hypothesis 2 and indicates that the larger the number of prior alliances between partners, the less likely their current alliance is to be equity based, even when the presence of an R&D component is controlled for. The positive and significant coefficient for international alliance supports Hypothesis 4, which predicts that such alliances are more

likely to be equity based than domestic alliances. No support is found for Hypothesis 5, however, which predicts that the use of equity is more likely in multilateral than in bilateral alliances. These results remain true in subsequent models.

Models 4 and 5 were estimated using the measures of prior equity and nonequity alliances. The variable for repeated alliances was omitted because of multicollinearity concerns. In both models, results suggest that the number of prior equity-based ties between two firms reduces the likelihood that a current alliance between them will be equity based, thus supporting Hypothesis 3a.

Results do not support Hypothesis 3b, which postulates that even in the absence of prior equity ties, the larger the number of nonequity alliances between two firms, the less likely their future alliance is to be equity based. However, the number of alliances that actually fit this pattern was extremely small ($N = 23$). Thus, the insignificant finding may be the result of my having too few observations.

Looking at the overall fit of each of the models indicated by their $-2 \log$ likelihoods and associated chi-squares, I observed that the introduction of R&D in model 2 significantly improved the fit of the base model. Another significant improvement occurred in models 3 and 4, with the introduction of the variables for repeated, international, and multilateral alliances and that for repeated equity ties.

Table 4 presents the classification tables corresponding to each of the models in Table 3. These tables succinctly highlight the association between the predicted and observed responses for each model. All five models perform better than a random proportional chance model, which would have a "hit rate" of $p^2 + (1 - p)^2$, where p is the probability of an event's having occurred (Bayus & Gupta, 1992). On the basis of the observed proportion of events, I estimated p to be .65 (1,568/2,395). Thus, the classification accuracy for a random model is 54.25 percent. The percentage of correctly classified cases in the five models reported ranges from 65.7 to 67.7 percent, a rate clearly superior to the random model. The models also perform better than a simple model with only the intercept (which would predict all nonevents), albeit not by a large percentage difference. Although this pattern suggests a significant improvement over a random proportional chance model, it also indicates that I may have overlooked additional relevant variables.

The relative magnitudes of raw logit coefficients are not directly interpretable since they refer to the increase in logarithmic odds resulting from a unit increase in a variable. In Table 5 I present elasticities for the key variables entered in two models shown in Table 3 (Ben-Akiva & Lerman, 1985; Fernandez & McAdam, 1988; Peterson, 1985).⁷ Elasticities indicate the per-

⁷ I computed these elasticity scores by looking across all individual records as opposed to simply setting mean values for each independent variable and then looking at percentage shifts.

TABLE 4
Estimates of Fit of Logistic Regression Models

Observed	Predicted			Percentage Correct
	No Event	Event	Total	
Model 1				
No event	20	807	827	
Event	15	1,553	1,568	
Total	35	2,360	2,395	65.7
Model 2				
No event	125	702	827	
Event	91	1,477	1,568	
Total	216	2,179	2,395	66.9
Model 3				
No event	173	654	827	
Event	119	1,449	1,568	
Total	292	2,103	2,395	67.7
Model 4				
No event	199	628	827	
Event	177	1,391	1,568	
Total	376	2,019	2,395	66.4
Model 5				
No event	199	628	827	
Event	178	1,390	1,568	
Total	377	2,018	2,395	66.3

centage change in the probability of a hypothesized event for a one-unit change in an explanatory variable.

The results in Table 5 must be interpreted with caution since each variable has a different underlying measurement scale. In particular, for R&D, a unit change indicates that non-R&D alliances possibly had an R&D component. For repeated alliances, a unit change indicates the existence of one more prior alliance. Thus, Table 5 shows that if two firms had entered an R&D alliance instead of a non-R&D alliance, their likelihood of forming an equity joint venture would have increased by about 38 percent. If two

TABLE 5
Elasticities^a for Logistic Regression Analysis Results

Variables	Model 3	Model 5
R&D	37.73	38.36
Repeated ties	-14.13	
International alliance	12.47	12.10
Multilateral alliance	5.74	7.46
Repeated equity ties		-13.70
Repeated nonequity ties		7.51

^a Elasticity is the change in probability resulting from a unit change in an independent variable.

firms entering an alliance had one more prior alliance of any kind, model 3 suggests that their likelihood of forming an equity joint venture would have declined by 14.13 percent. Model 5 suggests that one more prior equity alliance reduced the likelihood of forming an equity alliance by 13.70 percent. Similarly, the marginal effects of international and multilateral alliances are also reported.

DISCUSSION

The results of models 1 through 5 (Table 3) provide strong evidence for most of the present hypotheses. They show (1) that R&D-based alliances are more likely to be equity based than non-R&D alliances, (2) that the larger the number of prior alliances between two firms, the less likely are their subsequent alliances to be equity based, (3) that the larger the number of prior equity alliances across two firms, the less likely their subsequent alliances are to be equity based, and (4) that international alliances are more likely to be equity based than domestic alliances. No support, however, emerged for the claim that prior nonequity alliances alone reduce use of equity in new alliances. Also, the number of partners in an alliance does not seem to affect the form of governance used.

Taken together, the results suggest that firms select contractual forms for their alliances on the basis of not only the activities they include (R&D), but also the existence and frequency of prior ties with a partner. What emerges from this account is an image of alliance formation in which cautious contracting gives way to looser practices as partner firms build confidence in each other. In other words, familiarity between organizations through prior alliances does indeed breed trust.

In an important review of the transaction cost economics literature, Bradach and Eccles (1989) argued that three primary control mechanisms govern economic transactions between firms: price, authority, and trust. They observed that, in equity alliances, firms rely upon a mix of price and authority—price because of concern for the value of their equity, and authority because of the hierarchy created. Such an approach, however, looks at alliances in a static context, treating each transaction as independent, without taking into account how the relationships can evolve over time. Observing interfirm alliances over time suggests that repeated ties between firms engender trust that is manifested in the form of the contracts used to organize subsequent alliances. Firms appear to some degree to substitute trust for contractual safeguards in their repeated alliances. Thus, trust is also an important component of the control mechanisms used within alliances.

The creation of trust is most visible between partners that already have an equity alliance in place. My earlier discussion of some of the processes underlying interorganizational behavior suggests that prior equity ties are not simply mutual hostages that enhance each firm's ability to penalize partners that behave opportunistically, but also conduits for the exchange of information between partners that allow them to build knowledge-based

trust in each other. The finding here that only having prior equity alliances led to looser contracts could very well indicate that equity alliances foster closer interaction between partners than do nonequity alliances.

The results reported here do not show that prior nonequity alliances alter the choice of subsequent contracts. Such alliances may represent purely knowledge-based trust but, as pointed out earlier, this argument is somewhat tenuous. It is difficult to draw any significant conclusions from this finding because of the extremely small number of observations of such cases.⁸

Although the findings reported here enhance understanding of governance structure in alliances, they have broad implications for transaction cost economics as well. Building on the original insights of Coase (1937), this theory has reified the transaction as the unit of analysis, treating each transaction as an independent event. It has ignored the work of Commons (1970), Coase's contemporary, who also placed importance on transactions as the appropriate unit of analysis but offered a more process-oriented and temporally informed view of transactions (cf. Van de Ven, 1993). Other researchers have offered similar exhortations (cf. Zajac & Olsen, 1993), but organizational researchers have yet to take them up. The current work, a step in this direction, suggests that transaction cost economics must explicitly incorporate the role of prior ties in its analytical framework. In particular, if the theory's emphasis on the transaction as the appropriate unit of analysis is to remain viable, the interdependencies that result from prior transactions should be included.

Within the broad market-versus-hierarchy argument, my focus has been on those cases in which firms have decided to form an alliance and face the issue of the type of governance to be used. Within this narrow domain, not only the complexity of activities within the alliance moderates firm behavior—the social context resulting from past alliances also affects the contractual form an alliance takes. Similarly, transaction costs as traditionally defined are unlikely to singularly determine decisions about the use of markets, alliances, or hierarchical integration, and social context should play an important role (Granovetter, 1985).

The findings of this study have several practical consequences for interfirm alliance activity and, more broadly, for interfirm cooperation. The study highlights a number of efficiency benefits that follow from creating trust in cooperative relationships. First, drafting detailed contracts can be costly and time consuming. *Business Week* (1986) reported that executives can spend as much as 23 percent of their time developing alliance plans and 19 percent of their time drafting legal documents. Trust between partners

⁸ In a competing perspective regarding prior nonequity alliances, commitment between organizations would be viewed as incrementally escalating. In this view, firms may first "test the water" with each other through loosely organized small-scale projects and subsequently expand the scopes of their partnerships by entering equity alliances with each other. In this case, the existence of a prior nonequity alliance would make it more likely that a subsequent alliance would be equity based.

can reduce such costs. As Arrow (1974) claimed, trust is perhaps the most efficient mechanism for governing economic transactions. Trust may also expand the realm of feasible alliances and allow firms to enter partnerships that may otherwise have been deemed impossible, even with detailed equity contracts. Furthermore, detailed contracts can stifle a partnership's adaptability to shifting environments.

Another efficiency-related benefit for firms in trusting relationships is reduced search costs. An important concern for firms seeking new alliances is the availability of trustworthy partners, and considerable effort can be devoted to identifying them (Nohria, 1993). Firms placed in a social network of trusting relationships can significantly reduce their search for new partners when they decide to ally with an entity they already trust (Gulati, 1993).

Limitations and Future Research

An important dimension omitted in this discussion is how organizational factors guide contractual choices. Each partners' size, technological sophistication, resource constraints, and prior experience with alliances can play a role, as can a host of other factors. Osborn and Baughn (1990) pointed to the size of partners as an important determinant of the governance structure of alliances.

Another possible line of inquiry would be a finer-grained analysis of contractual forms of alliances. For equity alliances, this analysis could entail examining what explains the distribution of ownership, or more broadly, the distinctions between asymmetrically and symmetrically owned partnerships. For nonequity alliances, researchers could look in more detail at the various forms included within this category, arrayed on a scale running from informal to formal, and some of the factors that explain the specific form used.

Following prior empirical research by transaction cost theorists, I used the presence of R&D in an alliance as a proxy for transaction costs. There is considerable room for improvement in measuring these costs. Such improvement would not only allow a more accurate assessment of the multifaceted role of transaction costs in alliances, but would also test how appropriate R&D has been as a measure of transaction costs.

Yet another arena for future research could be examining the social context in which alliances take place in more depth. My focus has been on direct ties between firms established through prior alliances. It would be interesting to assess the role of a broader social context, encompassing other forms of interfirm connections besides alliances, defined by both direct and indirect ties.

Finally, an important area for future research would be to identify, measure, and empirically assess the role of trust in the formation, governance, and ultimate success of interfirm alliances. I relied on the history of prior ties as the factor most likely to produce trust, but a vast gap in understanding the many dimensions of trust and their operation within alliances remains.

The suggested analyses offer exciting research opportunities, but require

the collection of data beyond those available for this research. Examining organizational factors guiding contractual choices would require detailed data on the firms participating in the alliances studied. Similarly, a richer analysis of the contractual forms themselves would entail collecting detailed data on the contracts used and, in the case of equity alliances, the distribution of equity shares. Disentangling transaction costs in alliances and assessing their various components would require detailed information on the transactions themselves and the specific circumstances of each of the partners. An examination of the effects of the overall social structure would entail collecting information on various additional ties among organizations. Assessing interfirm trust and its various dimensions would most likely entail a detailed survey administered to managers in firms participating in alliances. Given the comprehensiveness with which this study covered alliance announcements and the resultant large number of alliances included (2,417), detailed data collection on firms and contracts was not possible. These further issues are, however, important, and they present some of the most exciting opportunities for future research on interfirm cooperation.

CONCLUSION

The most basic conclusion that follows from this study is that contracts chosen in alliances do not depend wholly upon the activities included within the partnership and their associated transaction costs. Rather, such choices also depend on the trust that emerges between organizations over time through repeated ties. My findings suggest that neither transaction costs nor social factors should dominate discussion of alliances and that in the final analysis, any explanation should encompass both.

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BUILDING COOPERATION IN A COMPETITIVE INDUSTRY: SEMATECH AND THE SEMICONDUCTOR INDUSTRY

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This article presents the results of a grounded theory analysis of observation, interview, and archival data collected at SEMATECH, a research, development, and testing consortium in the semiconductor manufacturing industry. Three core categories of events and behaviors are described: (1) the factors underlying the consortium's early disorder and ambiguity, (2) the development of a moral community in which individuals and firms made contributions to the industry without regard for immediate and specific payback, and (3) the structuring that emerged from changing practices and norms as consortium founders and others devised ways to foster cooperation. We interpret results in terms of complexity theory, a framework for understanding change that has not been previously explored with detailed empirical data from organizations.

Pooling resources and responding to a threat are two conventional reasons for establishing cooperative efforts (Axelrod, 1984). Both reasons underlie the foundation of the SEMATECH (semiconductor manufacturing technology) consortium of U.S. semiconductor manufacturers and the U.S. government. The 14 founding firms formed the consortium because, as an executive of one of the largest firms put it, engineering the recovery of the U.S. semiconductor industry was something no firm could do alone (Barron, 1990). Through SEMATECH, firms could pool resources in the fight to recover market share from Japanese companies and to reestablish their supply and materials infrastructure, which had decayed as the U.S. market share of semiconductor sales dwindled (Ferguson, 1988). Market analyses predicted that by 1993, the U.S. market share, once at 85 percent, would shrink to 20 percent (SEMATECH, 1992a). The U.S. Department of Defense contributed to the consortium, because foreign control of essential computing resources threatened the future military and economic security of the United States

We would like to thank David Hime, for logistical help with preparing this article, and several anonymous reviewers at the *Academy of Management Journal* and Harry Trice, for their helpful comments and suggestions.

(Defense Science Board, 1986). This threat became increasingly worrisome in the 1980s, as the Soviet Union and its military power dissolved and Japan grew into a global economic power.

Before SEMATECH was formed, the U.S. semiconductor industry conformed to the neoclassical ideal of free market competition, in which individual firms' pursuit of their own goals leads to the efficient and productive use of resources (Etzioni, 1988). The notions of free markets and unremitting competition pervade U.S. culture, especially among businessmen, and are embodied in U.S. laws and regulations. "This competitive ethos makes co-operation across sectors or organizational boundaries very difficult. Until recently, only great national crises such as world wars have suppressed these competitive tendencies" (Trice & Beyer, 1993: 352). Early attempts at industry-level lobbying for trade restrictions against Japan failed because of lack of consensus within the semiconductor industry over objectives (Yoffie, 1988).

Proprietary standards were a powerful competitive weapon in the semiconductor industry. Disputes over proprietary standards led to long-drawn-out battles in court; those between Advanced Micro Devices and Intel are the best known. Analyses have shown that, in industries with rapidly changing technologies, proprietary standards create an intense level of competition fueled by the law of increasing returns: the "firstest with the mostest" gets farther and farther ahead (Arthur, 1990; Ferguson & Morris, 1993).

What is novel and theoretically interesting about SEMATECH, then, is that it offers insight into how cooperation can arise and persist in a highly competitive industry. We knew at the outset of this research that the consortium had achieved a minimal level of cooperation because it was in fact established and member companies had contributed financial and other resources to its support. We also knew that the consortium had both admirers and detractors. We did not design our study to resolve this disagreement over SEMATECH's effectiveness. Rather, we sought to derive some understanding of the factors that give rise to or impede cooperative relations among organizations, groups, and individuals (Gray & Wood, 1991; Ring & Van de Ven, 1994).

Because the reported research was carried out as a qualitative inductive study, the format of this article differs somewhat from the formats generally used in reporting quantitative research. The next section presents background information on the research setting, including a brief overview of research on consortia and a brief history and description of SEMATECH. In the following section, we describe how we tailored our methods to this setting. We next provide an overview of research on cooperation and competition that informed our data analysis. Our results follow; they are summarized within core categories that emerged from our grounded theory analysis. Next comes a discussion section in which we interpret our results in terms of complexity theory. We end with some implications of our findings for research and practice, and some general conclusions.

RESEARCH SETTING

Research on Consortia

Very little organizational data on U.S. research consortia has been collected since they became possible under the Cooperative Research Act of 1984. Research on the Microelectronics Computer Cooperation (MCC), SEMATECH's most renowned predecessor, concluded that its attempts to realize returns on investments by transferring R&D technology projects to the marketplace were not completely successful and that the main lessons learned from the MCC experiment were the value of collaboration and shared technology (Gibson & Rogers, 1994). This conclusion may be premature, however, since the cycle for the commercialization of basic research runs for 15 to 20 years from the time of its invention. Another study of four consortia, including MCC (Evan & Olk, 1990), focused on managerial problems stemming from their separate locations and changing memberships. A survey of U.S. and Japanese consortia found that they differed substantially in structure, with U.S. consortia using a wider variety of mechanisms and being generally more active in information exchange (Aldrich & Sasaki, 1993); an earlier report of results from the same data set indicated that Japanese consortia were much more likely to conduct research in member firms than were U.S. consortia (Aldrich & Sasaki, 1994).

The current research focused on rather different issues: how the SEMATECH organization emerged out of the combined, cooperative efforts of many members of the rather diverse set of its founding companies, and how the consortium's formation and activities enabled and encouraged co-operation throughout the semiconductor industry.

Background Information on SEMATECH

Founding, mission, and structure. In 1987, SEMATECH was jointly founded by 14 firms that then accounted for 80 percent of the semiconductor manufacturing industry (SEMATECH, 1992b) (Table 1) and by the U.S. government. Its mission was stated as follows: "To provide the U.S. semiconductor industry the capability of achieving a world-leadership manufac-

TABLE 1
SEMATECH's Founding Companies

Advanced Micro Devices	LSI Logic*
AT&T Microelectronics	Micron Technology*
Digital Equipment	Motorola
Harris Corporation ^a	National Semiconductor
Hewlett-Packard	NCR ^b
Intel	Rockwell International
International Business Machines	Texas Instruments

* This company left SEMATECH when its membership obligation ended in 1991.

^b NCR became part of AT&T after SEMATECH was founded.

ing position by the mid-1990's" (Peterman, 1988). At least three strategies emerged in the early days of SEMATECH: to improve the industry infrastructure, especially the supply base of equipment and materials; to improve manufacturing processes; and to improve the management of factories (Peterman, 1988). These strategies were to be realized through cooperative research, development, and testing projects (SEMATECH, 1987).

Although all were approached, not all firms in the industry agreed to participate.¹ The 14 founding firms agreed to provide financial and personnel support to the effort for five years, with each firm's contribution to be proportional to its sales of semiconductors.² The plan called for SEMATECH to receive \$100 million annually from the member companies. The U.S. government agreed to match that sum, so that SEMATECH ended up with a planned operating budget of \$200 million annually and \$1 billion over the five-year period.³ SEMATECH actually spent about \$990 million during that period (General Accounting Office, 1992). Clearly, this was a substantial commitment on the part of both the industry and the government.

SEMATECH was officially chartered in 1987 and temporarily set up in offices in Santa Clara, California. In mid-1988, it moved to Austin, Texas, where it occupies a site leased from the University of Texas that includes a four-story office building and a small fabrication plant (Peterman, 1988). The number of personnel assigned to SEMATECH from the member companies has varied, averaging about 200 at any one time. Typically, assignees have worked about two years at SEMATECH. Other employees, called direct hires, provide support and administrative services. The total work force hovered around 600 in the years 1989-91. It has recently grown to over 800.

The official SEMATECH mission is updated annually, but certain specific technical goals were evident from the beginning. It seemed obvious that for the U.S. industry to remain competitive, it had to do two things: increase the number of usable chips that could be manufactured from each wafer of silicon and make each chip capable of doing more.⁴ SEMATECH launched efforts to do both, but its main cited achievements have been in finding ways to pack features onto chips. The chosen means for doing this was to reduce the width of the circuit lines that are etched on chips. The historical development in the semiconductor industry has been toward smaller chips with greater power. Responding to this trend was clearly a necessary basis for future competitiveness.

The organization of SEMATECH evolved over time, usually by adding new ways for member companies to collaborate or make inputs into the

¹ For example, Cypress Semiconductors, whose chief executive, T. J. Rogers, has been a persistent critic of the consortium, did not join when approached. Another firm that was asked but did not participate was Delco.

² Each contributed 1 percent of its annual semiconductor sales, with a cap of \$1.5 million.

³ Delays in the start-up and other areas led to some departures from this planned budget.

⁴ A wafer is the large output (up to six inches in diameter) of the fabrication process and contains many chips.

consortium's decisions. From the beginning, certain general governance structures were used to channel inputs from member companies into the consortium. A board of directors, composed of high-level executives from member firms, sets general policy and hires the chief executive officer (CEO). An executive technical advisory board sets general priorities for research, development, and testing activities within the consortium. Several technical advisory boards approve and advise on specific projects working within the general guidelines set by the executive board. These advisory boards are composed exclusively of representatives from member companies. In addition, a variety of task forces, councils, and other groups have grown up to address and advise SEMATECH on such issues as total quality, supplier relations, and technology transfer. Overall, a structure and method emphasizing joint problem solving through meetings pervade the organization.

SEMATECH borrowed structures from elsewhere in the industry as it developed. Sometimes the structures were deliberately patterned on what top management considered the best practices; sometimes assignees introduced them to meet certain task requirements. Three basic features of the structures have proved to be durable, in the sense that they were begun under the initial CEO's leadership and have persisted since his successor took over. The first is that the top three executives operate as a team, called the Office of the Chief Executive (OCE). The three confer frequently, attend important meetings together, and generally work closely together. A second feature is that SEMATECH has only three levels of management under the OCE—directors, managers, and project managers. The third is that the employees in SEMATECH are organized into project teams that work within designated thrust areas; some thrusts are technical, others are "enabling." A technical thrust might concern manufacturing and metals, an enabling thrust, technology transfer.

Struggles and achievements. All start-up operations involve difficulties (Mintzberg, 1983), and SEMATECH had a particularly tumultuous beginning. First came a year-long effort to locate a CEO to lead the organization, which ended with the appointment of Bob Noyce (see Table 2).⁵ Because Noyce was so widely respected and admired in the industry, his appointment was probably important for attracting able employees from the member companies to SEMATECH. Reports of his behaviors and the reactions of many SEMATECH employees indicate that he exhibited most of the qualities of a charismatic leader (Trice & Beyer, 1992, 1993). Next, within the first six months a rift developed and grew between Noyce and Paul Castrucci, the chief operating officer (COO) the board of directors had selected. Noyce had not met Castrucci prior to accepting the CEO position, and their difficulties

⁵ Table 2 identifies the key people named in this account. We use nicknames in keeping with the informality of SEMATECH's culture, which is described herein. The Appendix gives a year-by-year chronology of important events at SEMATECH.

TABLE 2
Key Participants Mentioned in Text^a

Participant	Role
Craig Barrett	Vice president and director of manufacturing at Intel and a member of the board of directors of SEMATECH.
Paul Castrucci	First chief operations officer; resigned over management conflict with Noyce.
Bill Daniels	A private consultant; had worked for Intel on meeting management.
Bob Galvin	Chairman of the board of directors at this writing.
Bill George	Chief operations officer at this writing; first assignee (from Motorola) to hold an executive office.
Sam Harrell	First president of SEMI/SEMATECH, the U.S. supplier association organized out of the international supply association; in 1993, became the first vice president for strategy at SEMATECH.
Turner Hasty	Member of the start-up team of 44 in Santa Clara; later chief operations officer under Noyce; acting chief executive officer after Noyce's death.
Sandy Kane	A vice president at IBM; chairman of the site selection committee for SEMATECH.
Peter Mills	Originally a member of the Chamber of Commerce team that brought SEMATECH to Austin, Texas; invited by Noyce to serve as his chief administrative officer.
Gordon Moore	Founder and president of Intel; member of the board of directors of SEMATECH.
Bob Noyce	Founder of Intel; first president and CEO of SEMATECH.
Jerry Sanders	President and CEO of Advanced Micro Devices; Member of the board of directors of SEMATECH.
Bill Spencer	Present CEO of SEMATECH; former group vice president and senior technical officer for the Corporate Research Group at the Xerox Corporation.
Charlie Sporck	CEO and president of National Semiconductor; early chairman of the board of SEMATECH, known as the father of SEMATECH.
Dean Toombs	Sent by Intel to transfer equipment certification program to SEMATECH.

* Where no other firm is specified, offices and positions mentioned are at SEMATECH.

in reaching agreement resulted in the COO's resignation. Then, only two years later, in June 1990, organization members experienced the shock of Noyce's sudden death and the loss of their charismatic leader. Just a few months later, SEMATECH employees had to adjust again, to a new CEO, Bill Spencer, who was recruited from outside the member companies of SEMATECH.

Despite the turbulence of the first three years, the organization met its demonstration milestones of finding ways to reduce the size of the lines etched on chips in three phases. Phase 1 achieved .80 micron etched lines on manufactured chips by March 1989. By the end of phase 2 in October 1989, the line size was decreased to .50 micron. By December 1992, SEMATECH was able to announce that it had completed phase 3 by reducing the etched lines to .35 micron. Also by the end of 1992, the semiconductor industry had stopped the free fall in market share that had been occurring five years earlier and had begun to regain market share from the Japanese (SEMATECH, 1992a).

This reversal of fortune for the semiconductor industry has been attributed to several factors, including U.S. trade restrictions, the increasing impact of Korean manufacturing competition on the Japanese, the recession in Japan in the 1990s, and the efforts of SEMATECH (Financial Times, 1993). Any effects of SEMATECH would, of course, have been indirect. SEMATECH's role is to develop new manufacturing technologies and methods and transfer them to its member companies, which can thereby presumably manufacture and sell improved chips. SEMATECH's precise contribution to the market recovery is therefore extremely difficult to assess. What matters, however, in the context of this research, is that 11 of the original 14 member companies and the U.S. government agreed to extend their membership in SEMATECH for a second five-year period and committed themselves to new and expanded goals. Their continued commitment to SEMATECH indicated that they believed that SEMATECH had achieved something worth their investments. As Craig Barrett of Intel told us, "I judge SEMATECH by results. The organization set out to recover market share from Japan; five years later, market share has been recovered. At Intel we call that a results-oriented, successful project."

METHODS

This study employed qualitative methods because we wanted to capture the development of cooperation in this organization in the rich detail that only accounts of the organizational founders and early participants could provide.

Sampling

As is appropriate in qualitative research, theoretical sampling was used (Glaser, 1976; Glaser & Strauss, 1967). To assure that our data came from all levels of SEMATECH and especially, that information from lower-level employees would inform the study, we invited all employees to participate in the study via SEMATECH's E-mail system. Six individuals volunteered and were interviewed during the first two months of the study. We subsequently interviewed 54 founding and current leaders, selecting initial interviewees by reviewing records and asking those individuals to identify others. Those

interviewed included 14 industry executives, 8 SEMATECH executives, 12 SEMATECH assignees, 14 SEMATECH direct hires, and 6 industry experts.⁶

Data Collection

Interviews, which were private and conducted face-to-face,⁷ were structured to begin with brief professional histories of the interviewees and a description of how they and their firms became involved in SEMATECH. These narratives lasted approximately 10–15 minutes and were used as bases for follow-up questions for the remainders of the interviews. The interviews ranged in length from 25 to 120 minutes and were audiotaped and transcribed for analysis.⁸ Throughout data collection, we had the advantage of access to Turner Hasty, a key informant who gave several additional interviews. Hasty had worked on the original SEMATECH formation group of 44 in Santa Clara, California, and was COO under both Noyce and Spencer and the interim CEO following Noyce's death.

We also reviewed, with Hasty, documents in ten bank boxes of organizational archives from the files of key early executives and the collection of the SEMATECH librarian. In addition, we read, sorted, and abstracted over 5,000 reports and news articles on SEMATECH identified from a full-text LEXIS computer search and stored these abstracts in text files by topic. We worked with the SEMATECH librarian to develop a timeline of events from this material. The product of this review was a 25-page chronology of SEMATECH history. In addition, we observed and recorded the behavior of organization members at 15 SEMATECH meetings conducted in 1992 and 1993.

Data Analysis

Given an opportunity to analyze a novel and apparently successful instance of interorganizational cooperation, we wanted both to develop a theoretically interesting example and to identify behaviors and strategies that might be applicable to other interfirm settings. We chose grounded theory methodology (Glaser, 1976; Glaser & Strauss, 1967; Strauss, 1988) primarily because we aspired to derive new theoretical insights from the data we gathered on this unprecedented and unique effort at building cooperation.

We coded the transcripts using constant comparative analysis in which each incident was assigned to an emergent open coding scheme (Strauss & Corbin, 1990: 61–74) until all interviews had been coded (Browning, 1978). Two of us jointly produced 130 codes and subsequently reduced these into increasingly abstract categories through axial coding (Strauss & Corbin, 1990: 96–115); this stage of the analysis produced 24 categories. In a process of selective coding (Strauss & Corbin, 1990: 116–142), we further collapsed

⁶ Four people were interviewed twice and one was interviewed three times, for a total of 66 interviews from 60 people.

⁷ There was one exception, an interview completed by phone.

⁸ Interviews with key founders were also videotaped for the historical archives at SEMATECH.

and renamed the categories to yield the 17 categories presented in Table 3 and described in the Results section.

Although all sources of data proved useful for cross-checking purposes, the 66 interviews were the primary source of data for this report. Archival and observational data are used here to verify and provide context to the reports of the interviewees. As it turned out our interviewees—especially the engineers, chemists, and physicists who had played a role in the development of SEMATECH—had surprisingly clear recall about what had happened and were quick to verify events, dates, and outcomes from planning calendars and documents. The few apparent discrepancies of fact that arose were reconciled through additional interviews with the original informants involved.

Validity

The processes involved in the constant comparative method we used in this study include internal checks on the validity of the data (Kirk & Miller, 1986). As data are collected and coded, investigators develop conceptual categories, and tentative hypotheses about them emerge. Questions about certain matters of fact will also arise as important to understanding and interpreting the data. The investigators can then collect additional data to test the bounds of conceptual categories, matters of fact, and tentative hypotheses from additional informants or from other sources of data.⁹ As the research proceeds and new data are collected, they are constantly being compared to prior data in terms of categories and hypotheses. When new data yield new or inconsistent information, conceptual categories and the emerging theory are modified to take them into account. This process is repeated until theoretical saturation is reached: until no new categories are emerging and no new information inconsistent with the categories and tentative hypotheses is being generated (Glaser & Strauss, 1967; Strauss & Corbin, 1990). In a sense, the constant comparative method involves multiple testing of the "hypotheses" incorporated into the final "theory."

Our methods also permitted some within-method and between-methods triangulation. We could compare the data obtained from interviews with the data available from newspapers, documents, and our observations. We also employed a kind of time triangulation in which some information obtained from those involved in SEMATECH early in its history could be compared with that available from more recent participants. In addition, one of us was an independent investigator who had studied the same setting with similar methods but different research aims. Data from this second study, which included observations of SEMATECH events and over a hundred interviews

⁹ For example, when someone reported to us that the secrecy issue had been resolved early, we asked other informants if any firm had shared secrets they later regretted sharing. None were reported. When it appeared to us that firms were alternating contributions of top management talent, we asked one firm why it had lent a key executive to SEMATECH. The executive answered that is was that firm's turn.

with assignees at SEMATECH from 1992 and 1994, were employed in the present study to confirm and refine our interpretations of several key points, particularly those regarding the levels of cooperation among assignees and member companies.

As was mentioned, two of us independently coded all the interview data, then compared the coded categories for overlaps and disagreements and arrived at a common set of categories, which was then used to recode all the data. This process helped to assure that the coders interpreted the data similarly and did not miss relevant information. We employed similar checking and reconciliation processes during axial coding. The remaining author participated in the selective coding stage, playing the role of questioner and devil's advocate. At this final stage of coding, we changed no categories but merged several; we also renamed many categories to fit the emerging theory and clarified the relationships among some.

In qualitative research, the primary checks on validity are among informants and between them and archival sources. Only data that were consistent across informants and sources are reported here. To further verify the accuracy of our statements and interpretations, we submitted this article to the standard document review process at SEMATECH. In the course of this process, the consortium's current CEO, its director of communications (who had been a member of the organization throughout most of SEMATECH's history), its librarian, and its archivist read the article. In addition, our key informant, Turner Hasty, reviewed the manuscript in detail. We made a few minor corrections in response to the suggestions of these people.

Before presenting our results, we briefly discuss the literature on cooperation and competition that informed our analysis.

COOPERATION AND COMPETITION

As polar opposites, the concepts of cooperation and competition to a degree define each other. Cooperation and competition coexist in a system highly susceptible to change. Computer simulations show that a disturbance of only 2 percent is enough to move rational players from cooperation to competition; simulations of the "prisoner's dilemma" game have consistently shown that a domino effect results from a single player's defections (Axelrod, 1984). Perhaps more surprising is that the converse is also true—in computer simulations, when 2 percent of the actors are "hard core unconditional givers," noncooperation becomes cooperation (Kondo, 1990: 523).

Competition exists when resources are defined as scarce, when the relationship between the players is defined as a "win-lose" one, and when winning is measured in terms of the differences between what the players have (Bendor, Kramer, & Stout, 1991). Competition involves not only controlling scarce resources, but also defining the relationship as including no future interactions or interdependence (Axelrod, 1984). Competition often invokes the use of strategy, with one player estimating the reaction of the other player to his or her action (Gray & Wood, 1991).

In contrast, cooperation occurs when people or groups act together in a coordinated way to pursue shared goals, enjoy an activity, or simply further their relationship (Argyle, 1991: 4). Cooperation usually involves not only the coordination of activities but also the sharing of the benefits that emerge from the cooperation (Deutsch, 1993). Cooperation is also said to exist when behavior "maximizes both the individual's and others' interests, whether the situation involves correspondent or noncorrespondent interests" (Derlega & Grzelak, 1982: 3). It is possible to structure conditions that lead to cooperation (Cardinal, 1990), but some degree of constructive conflict is often useful. Individuals engaged in truly cooperative behaviors tolerate conflict and use real-time communication (Vaill, 1980) and individual give-and-take discussions to reach productive outcomes (Deutsch, 1993). Finally, a cooperative relationship casts a "shadow of the future": parties treat each other as though their future relationship counted (Axelrod, 1984).

Both cooperation and competition figure in the story of SEMATECH. In our results, various aspects of these concepts become evident.

RESULTS

Our analyses suggest that three sets of social conditions enabled the development of cooperation within the semiconductor industry and SEMATECH. They were (1) early disorder and ambiguity, (2) emergence of a moral community, and (3) structuring of activities. These conditions emerged as the core categories of our analysis (Strauss & Corbin, 1990); each contributed to cooperation in various ways, as reflected in the selective categories listed in Table 3. As is evident from the table, some coding categories are relevant to more than one core category.

Early Disorder and Ambiguity

The early days of any new organization are difficult because of the uncertainty surrounding norms, roles, strategies, and structures. These uncertainties mean that people experience a lack of order—they don't know how things fit together. For example, they do not know what is important to do or what is important about how they do it. Lacking an existing social order to structure their efforts, people have the opportunity to innovate, either accidentally or deliberately. Weick (1979) conceptualized the organizing process as moving from equivocality to structure. Thompson (1967) pointed out that organizations thrive on uncertainty by removing it.

The selective categories in this core category describe both the state of disorder characterizing SEMATECH in its early days and some key strategies members devised for coping with that disorder.

Early equivocality. During the formation of SEMATECH, member company representatives participated in a series of workshops charged with setting technical objectives for the consortium. The end product of this "bottom-up" planning was a wish list containing something for everyone—more objectives than the consortium could conceivably fund or accomplish

TABLE 3
Coding Themes and Core Categories

Coding Categories	Core Categories*		
	Early Disorder and Ambiguity	Moral Community	Structuring
1. Early equivocality	X		X
2. Mixed conceptions of culture	X	X	
3. Valuing continued change	X		X
4. Constructive conflict	X		X
5. Indirectness	X		X
6. Prior social ties		X	X
7. Inclusiveness		X	X
8. Unconditional giving	x	X	X
9. Self-amplifying reciprocity	x	X	
10. Manifold contributions	x	X	X
11. Within-firm communication		X	X
12. Public actions		X	X
13. Faith in the outcome	x	X	X
14. Openness	x	x	X
15. Meetings		X	X
16. Creating new structures	x		X
17. Standards	x		X

* X = central to core category; x informs core category.

within its designated five-year life span. When Noyce became CEO, one of the tasks he faced was to pare down this list into a set of achievable goals. Noyce was too supportive of people and too enthusiastic about SEMATECH's mission to be good at this task, and eventually it was Hasty who sold Noyce on a smaller set of objectives, one of which was providing substantial technical assistance to the supplier industry. However, once assembled, the wish list was a social fact, and keeping people's interests and efforts focused on the second, narrower set of objectives continued to be a point of contention over the five-year period. For example, differences over the goals of SEMATECH were highly visible at meetings we observed in the summer of 1992.

After its move to Austin, the SEMATECH organization grew rapidly, but positions were filled unevenly. As one early assignee told us, people were coming in at all different levels. Some people in high-level positions had only 1 person reporting to them; others in lower-level positions had 50 people reporting to them. These circumstances created ambiguity about individual identity and status. A story told by one early direct hire illustrates this situation very well: An employee expressed his anxiety about his lack of a job title to Noyce at a meeting; the CEO jokingly replied that people could invent their own job titles if they wanted to. Some people subsequently did. Their doing so suggested that, even when the invented titles were humorous, employees felt a lack without them. Noyce also effectively discouraged the compilation or use of internal organizational charts. Those that existed were compiled to meet the demands of external constituencies.

The early selection of assignees was conducted through means such as postings on bulletin boards at member companies. In some instances, the assignees who went to SEMATECH were the people who had asked for permission to go rather than those who were needed for mission-related tasks. Under these circumstances, many informants agreed, everyone suspected that those permitted to go were those who would be missed least by their parent organizations. This common suspicion made many assignees wonder what being assigned to SEMATECH meant about how their companies valued them. Another result of this informal selection process was that many came to Austin to get support for pet projects for which they could not get backing in their parent firms. The mix of private agendas, new faces, and an equivocal structure made the early experience of SEMATECH chaotic. This noisiness in the internal environment made cooperation highly valued when it arose (Bendor et al., 1991).

Mixed conceptions of culture. Because they were drawn from so many different companies, the assignees naturally saw their industry and work somewhat differently. Some came from companies with distinctive, strong, celebrated cultures. Others came from companies with weaker or less evident cultures. One of the early techniques SEMATECH used to bridge the cultural differences assignees brought with them was to compile a dictionary of technical terms and acronyms. Before this attempt at standardization, many firms prided themselves on having unique names for things. The dictionary has been updated six times since 1988, when the first edition was prepared.

Many of the early participants in SEMATECH felt that they could not afford the luxury of working on the culture because they "needed to do it like Marines hitting the beach," in the words of Sam Harrell, vice president for strategy. The fixed duration initially set for SEMATECH's existence created a deadline by which a wide variety of ambitious plans were supposed to be realized. Bill Daniels, a consultant, told the top management at SEMATECH that it took three to four years to build a culture.¹⁰ Other participants felt that it was impossible to build a culture with assignees, who formed the operating core of SEMATECH, coming and going all the time. Bill Spencer, the consortium's CEO at the time of this writing, said that "managing SEMATECH was like managing a parade."

These remarks imply a conception of culture as relatively permanent and consciously created and managed. What they miss is that SEMATECH was, from the beginning, a highly normatively charged organization with a strong sense of mission. In other words, it embodied a set of ideas around which a culture could coalesce. All that was needed to make a culture grow was cultural leadership and appropriate cultural forms (Trice & Beyer, 1993).

¹⁰ Bill Daniels was an intellectual grandchild of Rensis Likert, from whom Daniels's chief mentor had learned his consulting skills (cf. Likert, 1967).

Our data indicate Bob Noyce was very much a cultural leader; his actions fostered an open and egalitarian organizational culture. A frequently repeated story told how Noyce, on arriving at SEMATECH to assume the position of CEO, took off his tie as soon as he entered the building. Thus, he signaled that this would be a hardworking, informal organization. All the staff members who accompanied him immediately followed suit. Noyce also supported the practice of dress-down Fridays, which was common in much of the industry, at SEMATECH.¹¹ Another symbol of the democratic values Noyce practiced was that everyone, including himself, had open offices. Relatively low partitions separated one person's work area from another's. Also, there were no designated parking spaces. Hasty and Mills willingly followed Noyce's egalitarian example. Another factor that helped to reinforce a democratic and open culture in SEMATECH's formative years was the ambiguity of assignees' prior and current statuses. The egalitarian culture in turn fostered participation and cooperation by treating all contributions as potentially valuable.

Valuing continual change. SEMATECH early developed a meta-criterion for judging how to respond to deteriorating conditions in the industry. Leaders expressed this standard through the watchword phrase, "If it's not competitive, change it." The phrase emphasizes rationality and causality by specifying "competitive" as a standard and naming an action step—change it. This phrase also tied the member companies and their suppliers together in a "community of fate" (Sabel, 1993: 1135). If they did not change, their industry would disintegrate. Sam Harrell summarized the challenge: "SEMATECH empowered every member company, every supplier, and every device-manufacturing business to change their own practices. . . . Everybody had to take a stark look at the gallows in 1987 and say, 'I'm willing to make the changes required for the gallows to be for someone else.'"

One of the routes chosen to make the industry more competitive was to develop and continuously raise standards. The old criterion, lowest cost, was shown to be inappropriate in the competitive environment U.S. firms faced. A switch was made to a total-cost-of-ownership criterion, which took into account installation costs, servicing costs, reliability during manufacturing, and the technological life of a product. Applying this criterion meant that suppliers had to worry about what manufacturers needed and manufacturers had to cooperate by telling them. Interdependence, a motivation for cooperation, became much more evident (Deutsch, 1993). The new criterion also embodied dynamism—people came to accept the idea that standards were ever-changing and that what was competitive today would not be

¹¹ Many firms in the computer industry allow informal dress like blue jeans, sports shirts, and tennis shoes all of the time for people in jobs that don't involve contact with customers. Dress-down Fridays generally allow this dress for everyone. At SEMATECH, Noyce himself followed this practice while on site.

competitive tomorrow. SEMATECH could never rest on its laurels; the requirement for change was constant.

Constructive conflict. Hornstein (1982) showed the value of the attention and recall that people use when a structure is in flux. In the absence of structure, the people at SEMATECH wrote their own job descriptions and, as already mentioned, sometimes conferred titles on themselves. When Turner Hasty tried to structure various research projects into an overarching management plan, as Bill Daniels had advised him to do, he provoked a lot of hostility and infighting. Hasty then checked back with Daniels to see if this was what the consultant had expected. Hasty was reassured by the consultant that conflict needed to come out and be resolved before members could learn how to cooperate.

The meeting management skills that Intel contributed to SEMATECH included a specific technique for addressing conflict, the constructive confrontation technique. When using this technique, any person at any level could criticize an idea as long as the criticism was not personal. This practice had the effect of limiting the ego involvement in disagreements and making them easier to resolve. It also made subsequent cooperation easier.

Indirectness. When uncertainty was especially great, openness, directness, and specificity did not always help SEMATECH participants to reach decisions. Some key events reflected leaders' use of indirectness to structure events in ways that were not obvious to most participants in the events. This indirectness, which was especially valuable during the formation period, resembles what Weick (1977: 43) called play.

One early and potentially divisive decision was the choice as to where SEMATECH's permanent site would be. SEMATECH had funded a program, Centers for Excellence, that supported research at the top ten engineering schools in the United States, including schools in the population-rich states of California, Florida, New York, and Texas. The legislators from these states were active supporters of SEMATECH funding. The selection of the headquarters site was a delicate political issue. Sandy Kane, an IBM vice president, explained to us that he volunteered to assume the chairmanship of the site selection committee because of his concern that others at IBM would lobby to sell some of the real estate the company owned to the consortium as a site. He felt that his being chair of that committee signaled others within IBM that it would be extremely inappropriate for them to try to sell any of their vast and widely dispersed holdings to SEMATECH.

Another example of how indirectness was effective in the early days of SEMATECH was Turner Hasty's method of inducing engineers to participate in decisions. One early instance we were told about began when he took them a plan based on theoretical estimates that he knew needed greater specificity to be of value. He figured that the engineers, if approached directly, would not volunteer information on how the plan needed to be improved because, at this point, assignees were still keeping secrets. In presenting the theoretical plan at a meeting, he depended and played on the engineers' natural inclination to be critical and unwilling to let a fellow

engineer's work go by if it was wrong. They tore his theoretical model apart and in so doing, gave him the information he sought. As Bill Daniels, observed, Hasty had "cat's whiskers," an acute sense for detecting and finessing problems.

Another example of indirectness was Bob Noyce's habit of speaking in questions: one interviewee estimated he asked five questions for every direct statement he made. Noyce was a curious genius who liked to hear about almost any topic. This curiosity and his general interpersonal style made him very approachable. His attentive listening also was a form of cooperation (Deutsch, 1993). These qualities empowered people to act on the clarity they gained from conversations with Noyce. As Ann Bowers Noyce, his wife, and a semiconductor industry executive, commented, "Bob just assumed a person would act on what needed to be done." People came out of conversations with him with the notion that Noyce expected them to go out and "do something wonderful." Because people wanted to please Noyce, they were "motivated by the expectation of emotionally-prompted social approval" (Hollander, 1990: 1157). In this way, Noyce's curiosity indirectly increased individual commitment and cooperation.

Summary. Perhaps the most basic condition that created ambiguity for SEMATECH was the inherently unstructured mission of the organization, which was no less than to revitalize the U.S. semiconductor industry. No one knew exactly how to do this, and experimental actions were therefore tolerated and valued. Changes in practices appeared to be imperative. Thus, the organization grew around the central idea that change was inevitable, must be confronted, and must be anticipated. The criterion that guided decision making was the need to change everything that was not competitive in the international market. Because SEMATECH was a new venture, no one had had the same experience before, and uncertainty and disorder could not be avoided. Indirectness and various other devices for limiting conflict and chaos provided some continuity and redirected energy when needed. Key inputs into the organization's emergence from disorder were the contributions of its early leaders.

Moral Community

Cooperation arises through normative processes. As Deutsch (1993) pointed out, one requirement for cooperation is community members' willingness to attend to the well-being of all other members. Sociologists have argued that communities generate, preserve, and reinforce moral inclinations. As Etzioni wrote, "Communities speak to us in moral voices. They lay claims on their members" (1988: 31). Etzioni defined the moral community as one with a sound moral and emotional underpinning: a community perceived as a "'We' rather than as an imposed, restraining 'they'" (Etzioni, 1988: ix-x). Cooperation and moral community coexist in a reciprocal and self-reinforcing relationship. To create a consortium in the semiconductor industry, leaders had to behave as members of a community with the superordinate goal of preserving their industry.

Prior social ties. Many of the early supporters of the idea of a consortium within the semiconductor industry had long-term personal relationships (Rogers & Larson, 1984). Charlie Sporck told us that he, Bob Noyce, Jerry Sanders, and Gordon Moore had worked together at Fairchild Semiconductors and exchanged family visits, experiences that provided a foundation of mutual trust and respect. These conditions in turn helped to give what they said to each other credibility and lowered the barriers of secrecy between them. Their shared work experiences had also been very positive; at Fairchild, they had founded an industry that changed the nature of electronics worldwide (Rogers & Larsen, 1984). The long-term bonds between these industry leaders allowed them to serve as catalysts for revival and reform of the industry. Their social ties contributed a base of common values and social similarities that facilitated interactions and communications.

Inclusiveness. Cooperative communities cannot be established if some members are excluded or relegated to out-groups (Deutsch, 1993; Mauss, 1967). By the time of its official formation, SEMATECH included 14 firms that accounted for 80 percent of U.S. semiconductor manufacturing (SEMATECH, 1992b). When three small firms later withdrew, SEMATECH still included 75 percent of the industry (SEMATECH, 1992b). Sandy Kane reported that, when the SEMATECH mission had been hammered out, Charlie Sporck made a point of inviting all the members of the planning group—not just those whose positions were reflected in the mission that was decided on—to the meeting at which the decision was announced. Early members of the executive group of SEMATECH were also sensitive to the issue of inclusion. Peter Mills reported that he and others advised Noyce to make a point of looking around at others in a room, even when he was part of an audience, so that speakers would not focus only on him. Peter Mills and Ann Bowers Noyce both volunteered that it was important to Noyce that SEMATECH not be an elitist "star culture."

Another important facet of inclusiveness at SEMATECH was the way in which it increased the influence of all (Tannenbaum, 1968). By having a common and public agenda, members of all parts of the industry were able to participate in redirecting it. Sam Harrell, the chief strategist at SEMATECH at the time of this writing, claimed that the dollars spent at SEMATECH have been few compared with the amounts being spent in research and development in member companies' labs. The aligned goals that emerged within SEMATECH meant that the resources of the whole industry began to be nudged toward the same goals.

Inclusiveness extended to the public agencies included in SEMATECH's original charter. At its founding, the consortium was charged by the National Advisory Council on Semiconductors to establish SEMATECH Centers of Excellence in top U.S. universities nationwide. SEMATECH was also to establish cooperative projects in manufacturing research in microelectronics at some of the 726 sites of the national labs run by various agencies of the government, including the National Aeronautics and Space Administration, the Department of Defense, and the Department of Energy.

In 1990, when Bill Spencer arrived at the consortium, however, many felt it had done all it could to help the industry weather the global market share crisis and that SEMATECH should disband when the five-year charter expired in 1992. Spencer saw how the worth of SEMATECH to the country as a whole could expand through developing national inclusiveness. When the consortium's continued existence was in question, Spencer, with the help of his COO, Bill George, convinced nearly all the member companies to renew their commitment and to persuade the government to renew its financial obligation, thus giving SEMATECH at least a second five-year charter. By 1992, SEMATECH was investing \$5 million a year in national laboratory programs, and the continued future growth of their collaboration looked probable (Spencer & Grindley, 1993). If SEMATECH had been guided by a vision narrowly focused on industry market share, rather than by Spencer's more inclusive one, this national benefit could not have been realized.

Unconditional giving. As Sandy Kane and others told us, Charlie Sporck, who was the CEO of National Semiconductor, is known as the father of SEMATECH because he took off a whole summer to poll the members of the industry and hammer out the agreement that led to the founding of the consortium. His action was a pure gift because it conferred benefit on others, imposed a cost on him (his inattention to his company), and was voluntary (Hollander, 1990). His contribution was not an exchange—rather, it was, in Boulding's (1981) terms, a one-way transfer or gift from his generation to that of his grandchildren. He often repeated that what was at stake was jobs for America's grandchildren. This level of contribution is what establishes community (Boulding, 1981).

Another crucial contribution was made by Bob Noyce, who came out of retirement to be CEO of SEMATECH at a time when, several informants felt, his not doing so would likely have meant organizational failure for the consortium. Early SEMATECH executives and assignees pointed out that (1) Noyce's personal reputation and fortune were such that he had nothing to gain or prove by leading another organization, (2) that with him at the helm, SEMATECH could gain support from Congress and member companies, and (3) that his presence gave luster and credibility to the whole effort. In addition, he contributed a participative management style that tolerated complexity and a degree of chaos that allowed the processes described here to unfold.

Texas Instruments' contribution to the leadership group was Turner Hasty, who originally came to SEMATECH during its formative phase and acted as chief operating officer both before and after Noyce's death. Although, as he told us, Hasty was far from sold on SEMATECH before he came, he gave prodigiously over several years of his energy and emotion. Other major contributions of managerial talent occurred after Noyce's death, when Bob Galvin came from Motorola to serve as chairman of SEMATECH's board of directors and Bill George came from the same firm to serve as its chief operating officer. As the top executive who sent George there put it, it was Motorola's turn.

There were, of course, many other contributions. For example, IBM and AT&T contributed technology to start the fabrication facility in Austin, Intel contributed methods of setting standards, and various companies allowed SEMATECH researchers to use their factories for testing. Our interviews with people at lower levels of the member companies indicated that they too cooperated as if they had learned the norms their leaders modeled.

Self-amplifying reciprocity. As the lawyer who represented the Semiconductor Industry Association in Congress told us, some participants and observers initially expected that free riding would be a problem at SEMATECH, but it didn't happen. Interviewees recounted how Intel, the least threatened of the member companies, took the lead and contributed additional high-level performers when other members were threatening to pull out if their visions of SEMATECH's mission were not accepted. According to Hasty, Craig Barrett, the director of manufacturing at Intel, called him and asked, "How can Intel have more of an impact on SEMATECH?" Hasty's answer was to send more high-quality performers, and Intel responded as asked. In doing so, Intel did not wait for others to contribute first, as traditional economic theory would predict. From then on, Intel made a series of linked contributions that amounted to a Kantian model for giving (Kondo, 1990), according to which all were obliged to make at least "the minimal cooperative contribution" that they wished others to make (Hollander, 1990: 1163).

Each firm's contribution to the efforts to found and operate SEMATECH built on and enlarged the contributions of others. Individual contributions had a multiplier effect because they established and reinforced norms that required all to join in. Moreover, the actions and contributions of each member firm were highly public. Major contributions did not occur all at once, but sequentially, as if the member companies were taking turns (Pruitt & Carnevale, 1982).

The result of this reciprocity was a group-based trust that allowed members to cooperate with "the expectation that others will respond favorably" (Bendor et al., 1991: 716). The norms of reciprocity and cooperation persisted because participants could use data from past experiences to predict others' future actions (Bicchieri, 1990). These norms were not invariably operative at SEMATECH, however. In a human resources workshop at SEMATECH, one of the industry experts we interviewed reported a visible amount of secrecy and competition.

Manifold contributions. The unselfish contributions of several of the early leaders of SEMATECH, already mentioned under the prior two categories, enabled SEMATECH to go forward. Without their inputs, the organization might have disintegrated or become frozen in form. As also explained earlier, the formation of a moral community created normative expectations that member companies and individuals would take turns in making contributions. The emerging norm of reciprocity ensured that SEMATECH did not wither or freeze for lack of new ideas and energy.

The very visible contributions at the top of SEMATECH set a tone for

everyone else in the organization. People who worked there said they came to feel that every contribution was valued. One unique feature of this organization was that people were encouraged to make contributions regardless of their position and status in the organization. Bill Daniels described a practice that symbolized this inclusiveness: executive secretaries were invited to teamwork training meetings with the members of the top management team, who in effect treated the secretaries as peers. As Argyle (1991) asserted, structuring relationships as peer relationships makes them more cooperative.

Bob Noyce's wife, Ann Bowers Noyce, formerly a human resource executive at Apple and a key player at Intel, induced Noyce to take women in particular seriously and give them opportunities. Demonstrating to him what women could contribute in a male-dominated industry, she served as a catalyst for changing the treatment of other women.

Another important set of contributors were the direct hires, the people who worked directly for SEMATECH, primarily in support roles, and were hired for indefinite terms. The egalitarian and open-ended culture at SEMATECH allowed many of these people to make contributions that they would not have been allowed to make in more traditional organizational structures and cultures. Our direct hire informants reported feeling that they could realize their potential at SEMATECH. Assignees, too, realized that they were being given more latitude and responsibility at SEMATECH than they were likely to have when they returned to their member companies. Another unusual and valuable role was played by a group of facilitators who acted as third parties and thus were helpful in reducing early distrust and hostility (Deutsch, 1993).

The level of effort was so high while Noyce was CEO that many interviewees reported they could not have kept it up much longer. People worked around the clock and on weekends. The parking lots were never empty. Direct hires who had been with the organization for a long time reported to us that the early instability and disorder complicated everything; it took ingenuity, persistence, and effort to get things done. An extreme example of the dedication that employees exhibited toward their work was that one woman delivered a baby via cesarean section so that the birth could be scheduled when it would not interfere with work commitments. These extraordinary levels of energy and effort¹² kept the organization growing and prevented stagnation.

Within-firm communication. Various informants recounted ways in which member firms in SEMATECH varied considerably in their norms and skills in internal communication. Good internal communication helped some firms to align their managers' and assignees' conceptions of what

¹² Such extreme levels of effort and commitment to work of course had a dark side in terms of organization members' health and nonwork life.

SEMATECH was about and how to work with the consortium. Such internal alignment put the firms in a better position to cooperate at SEMATECH. The two firms noted for their skills in resolving internal differences and managing conflict constructively were Intel and Motorola (Browning, Weick, & Powers, 1994; Daniels, 1994). They were also the firms that were, in most observers' opinions, the most influential in shaping practices at SEMATECH. An early Intel assignee opined that Intel had influence because it used vertical communication structures that enabled its managers to agree internally on what they wanted. Other firms, notably Texas Instruments, with its history of military work, were more secretive internally as well as externally (Wiggins, 1994). Participants were well aware of their relative skill in communication. Bob Galvin commented that one of his reasons for joining SEMATECH was to transfer Motorola's internal learning about co-operation to SEMATECH and other firms in the industry.

Another example of the importance of within-firm communication involved the transfer of technical information from SEMATECH back to member companies. Hewlett-Packard had had more experience than other member companies in managing such interfaces. We learned from a Hewlett-Packard executive that the firm set up a board of directors' committee to conduct interactions with SEMATECH and an internal network that covered the entire span of technical areas relevant to Hewlett-Packard to receive and pass on information from SEMATECH.

Public actions. One reason there was so much public communication about problems in the semiconductor industry was that key members agreed on the need to educate others in the industry on the seriousness of the threats they faced. Sandy Kane told us about how he developed and delivered a talk on the dire state of the industry. After various presentations at IBM, John Akers, that firm's CEO, approved Kane's going public with the talk. Between February and June 1986, Kane gave his briefing 25 times to executives of major U.S. semiconductor firms. His "obituary," as the briefing came to be called, was intended to wake them up and persuade them that something had to be done. Other informants reported that this was a time of ferment and of many public discussions within the industry, all of which prepared the way for a fateful decision. In June 1986, members of the Semiconductor Industry Association asked Charlie Sporck to head an effort to establish the consortium that became SEMATECH.¹³

To win Congress's approval for federal funding of SEMATECH, the industry association's leaders not only pledged their own financial support, but also publicly committed themselves to specific goals. The publicness of

¹³ Our first interview with Sam Harrell contradicts this account; he reported that, through the Semiconductor Equipment and Materials Institute (SEMI), a supplier industry association, he made an extensive effort to find a champion to address the issues of infrastructure. He said that SEMI identified and educated Sporck on the issues in order to place him in a position to assist the industry.

these actions made them less revocable and served to increase the commitment of association members to the new consortium (Goodman, Ravlin, & Schminke, 1987).

As these examples show, the actions taken to found SEMATECH were unusually public, at least for the semiconductor industry. Publicness also became the norm for SEMATECH's governance. Two early participants in SEMATECH told us that when it was discovered that the first COO, Paul Castrucci, had made private decisions that allocated vast sums for equipment and other ventures, his actions were considered insubordination. Several informants told us that Castrucci's penchant for making private decisions and other differences in management style between him and Noyce became bones of contention and eventually led to Castrucci's resignation.

Faith in the outcome. Axelrod (1984) argued that people are more likely to cooperate when the shadow of the future is long. Sable added that cooperation occurs when gains from future dealings are "highly valued in relation to current ones" (1993: 1135). "If people think that their future is not important compared with their present, they cannot cooperate" (Kondo, 1990: 504).

When SEMATECH was formed in 1987, the prediction was that if the loss of U.S. market share continued, that share would be 20 percent by 1993 (SEMATECH, 1992a). Instead, U.S. market share rebounded to 47 percent, placing the United States ahead of Japan for the first time since 1986. The five-year term for firm membership in SEMATECH was based on the five-year federal funding, which was subject to yearly review (U.S. Congress, 1987). Under the leadership of Bill Spencer, most of the member companies continued to exhibit faith in the mission and effectiveness of SEMATECH, which won another five years of support from most of its original members and from Congress in 1992 (McLoughlin, 1992).

Summary. A confluence of the elements described above enabled a moral community to emerge and be maintained at SEMATECH. The semiconductor industry was highly competitive, and it was unclear at the outset whether its manufacturing firms would be able to cooperate in this new consortium. Such an attempt was, after all, unprecedented in U.S. industry. The executives who came together to found and support SEMATECH came from differing company cultures; they did not all have or express the same ideas for the consortium and how it would help the industry. What was clear, however, was that there was a lot to be done and that the need was urgent. People poured themselves into jobs and activities that were accomplished incredibly fast. In addition, there was a pervasive issue of potential cultural misunderstanding and conflict. But despite these conflicts, cooperation and industry change were achieved. How and why?

Kondo (1990) argued that normative cooperation is insufficient for changing a system; creating change requires exemplars of unconditional giving. The behaviors of such "moral heroes" (Fishkin, 1982) act as catalysts for transformation. Also, one of the key conditions that Deutsch (1993: 515) identified as essential to cooperative learning is that participants remain

moral persons who are caring and just. The founding and development of SEMATECH occurred in circumstances that met these enabling conditions. As a result, SEMATECH was able to be successful in changing industry practices.

Structuring

The definition of structures used in our analysis was taken from a 1984 work by Giddens, whose major categories for analysis were frameworks and interactions. Interactions include the discussions and speech behaviors needed to build and maintain cooperation. Frameworks are the structures that emerge to bound and give meaning to the interactions (Cassell, 1993). Giddens saw interactions as leading to frameworks that allow new interactions that can create new structures; he called this interactive sequential process reflexivity. Our data on the development of SEMATECH yield many examples of reflexivity.

Openness. One issue that needed to be resolved early in SEMATECH's history was the potential difficulty that would be caused by member firms' considering their manufacturing processes proprietary. Prior to resolving this issue, many informants agreed, members felt they had to keep such information secret, and long periods of silence characterized meetings. Turner Hasty was the first to realize and express the idea that the secrets being kept were not secrets at all and that the differences between firms were primarily cultural, not technological. An early assignee from Intel estimated that "almost 85 percent of the information is generic; only the top 15 percent is truly proprietary." Peter Mills reported that Hasty raised the issue in a single dramatic moment, when he asked others at a meeting: "Can't you see, we're all talking about the same thing?" Thereafter, assignees began to confer with their companies about what they would share at SEMATECH, sometimes by calling "home" at breaks during meetings to inquire about sharing a particular piece of information. Resolving the secrecy issue early meant that meetings became productive.

Because we learned early in our interviews that secrets had been an issue, we checked with all subsequent informants to see whether any member companies had incurred costs from secrets revealed at SEMATECH. We could find no evidence that anyone at SEMATECH had made the Type I error of trusting too much (Bendor et al., 1991: 713).

Meetings. One of the responses to the early chaos within SEMATECH was to import practices for managing meetings that had been used effectively at Intel. Bill Daniels, who had consulted for Intel, told us how he trained SEMATECH organization members in meeting management in 1988. The problem-solving orientation they learned from Daniels encouraged explicit information exchange in meetings rather than expressions of individual agendas (Pruitt & Carnevale, 1982). The joint problem solving that this training encouraged also fostered cooperation (Argyle, 1991). The meetings involved face-to-face interactions in which members could express their positive interdependence in visible behaviors (Deutsch, 1993: 510).

External observers criticized SEMATECH for wasting its effort on meetings, but insiders, who could see the value of those meetings, made no such criticisms. For example, Sam Harrell reported that the supplier community thought that the workshops SEMATECH held were "the most valuable deliverable in the first three to four years of SEMATECH."

Our observations of meetings at SEMATECH confirmed that SEMATECH had established norms for conducting meetings. The meeting management program at SEMATECH emphasized concrete outcomes and to that end employed agendas, deliverables,¹⁴ strict use of time, and equalizing the opportunity to speak. Our observations also showed that the use of facilitators to keep meetings on track was common. Participants reported to us that meetings produced valued results, reinforcing their faith in the positive outcome of their efforts and thus also supporting a moral community.

Creating new structures. The early meetings within SEMATECH were directed toward creating consensual frameworks in the form of goals, technological road maps, rules, contracts, position descriptions, and new organizations. Informants reported and documents show that one such consensus, reached quite early in SEMATECH's history, concerned strengthening the U.S. supplier industry. Members realized that U.S. manufacturers could not be competitively secure unless they had a strong domestic supplier industry. There were widespread fears, supported by an event at Hitachi, that too much dependence on the Japanese in particular left U.S. manufacturers vulnerable if Japan were to fail to inform them of new technological developments while informing their Japanese rivals.

One impediment that needed to be overcome to realize this goal was to find a structure through which SEMATECH could influence the suppliers. SEMI, the international association of suppliers to the semiconductor manufacturers, included foreign firms, but SEMATECH's agreement with the U.S. Congress was to support only the U.S. industry (U.S. Congress, 1987). To allow SEMATECH to work with the supplier community, a United States-only organization of suppliers called SEMI/SEMATECH was formed (Peterman, 1988).

Not all the structures that emerged were so rationally designed. Turner Hasty and Peter Mills reported that the Investment Council, a contracting and oversight body, was created in response to Paul Castrucci's private dealings, mentioned earlier (SEMATECH, 1989). It was structured to execute contracts in a fashion that did not disenfranchise or alienate people in the industry and to assure fairness. As Peter Mills, the first chief administrative officer, said, "Anytime you make an investment decision, you're going to alienate someone out there. We came up with a methodology that is a good model in terms of project management and contract administration."

Partnering for Total Quality (PTQ) is another example of the innovative structures designed at SEMATECH. Staff members in this program explained

¹⁴ Deliverables are agreed-upon performance objectives.

to us that two groups were formed initially—one for partnering and the other for total quality management. Because their members interacted, the story goes, they soon realized that their domains and efforts overlapped, and they merged. The goals of the PTQ group were to improve the quality of products and services and to encourage close cooperation between suppliers and semiconductor manufacturers. A highly influential early assignee commented that the criticism of the U.S. supplier industry was that they were too focused on costs and not enough on quality. PTQ made available an extensive program of training and training materials. Two councils composed of supplier firm representatives were set up, one on each coast, to diffuse and encourage total quality management and partnering practices. Through these activities and through regular quality audits by their customers,¹⁵ many of whom were also members of SEMATECH, suppliers were urged to find out more about what their customers wanted; they were also urged to adopt the ideologies, tools, and practices of total quality management.

Standards. Before SEMATECH was founded, the semiconductor manufacturing industry used proprietary standards. Firms competed by trying to develop a standard they could own and use to either collect licensing fees or capture market share from competitors. Microsoft is a good example of a firm that has profited enormously from proprietary standards. One problem with such standards is that they produce industry fragmentation as innovators leave one firm and found another to cash in on their ideas. Investments, human capital, and effort are spun off from existing firms with these new foundings. The resulting fragmentation has been blamed for the vulnerability of the U.S. semiconductor industry to aggressive global competition (Alic, Branscomb, Brooks, Carter, & Epstein, 1992).

The existence of SEMATECH facilitated firms' arriving at cooperative standards.¹⁶ One event demonstrating how cooperative standards emerged was Intel's sending Dean Toombs to introduce its equipment qualification procedures to other member companies. Intel had been using these standards since 1986, when it was badly burned by attempting to open a new fabrication facility with what turned out to be unreliable U.S. equipment. Suppliers had regarded Intel as strange and arrogant when it imposed rigorous qualification requirements on all new equipment but had learned to value Intel's requirements for continuous improvements. These procedures were now introduced in the cooperative forum of SEMATECH, whose members were relieved of the pressure of antitrust threats and proprietary secrecy. Eventually, Intel's standards became institutionalized within SEMATECH through the Equipment Qualification Program and shared across the industry.

Summary. Although the structuring reported here was clearly a product of the cooperation outlined in our section on moral community, once in

¹⁵ These observations were made during field work at regional council meetings and supplier companies (Beyer & Roberts, 1994).

¹⁶ The Cooperative Research Act of 1984 relaxed prior antitrust restrictions on competitors' sharing information.

place, the new structures allowed for still more refined practices of cooperation. Meetings at SEMATECH now treat as routine the cooperative practices that were established with conflict and difficulty earlier. For example, early discussions of needed equipment often dwelt at length on the potential source of products. By 1993, these discussions had become routine. When a need for equipment is identified, the group is asked, "Does any firm here have equipment to share with SEMATECH?" If the answer is no, the group selects a supplier to develop the equipment for all members. Apparently, SEMATECH member companies have reached a new consensus over the distinction between proprietary and nonproprietary standards. Present-day assignees, when asked if the distinction between the two is ever unclear, responded without hesitation that everyone understands the difference.

We have presented our results within 17 selectively coded categories nested in three core categories intended to capture underlying similarities in events' meanings. Some ordering of the data was needed to derive a coherent story from a very complex and interdependent set of events and to facilitate finding patterns among events that are unaccounted for by previous theory and thus qualify as discoveries or new contributions to theory. The procedures we used are typical of constant comparative analyses, but we want to point out that the categories we derived are not and were not intended to be mutually exclusive, as might be expected in a quantitative procedure like orthogonal factor analysis. Rather, bits of data are often relevant to more than one coded category, and coded categories are often relevant to more than one core category. Table 3 summarizes how we see the 17 selectively coded categories as fitting into the three core categories. The table illustrates how difficult it is to capture the richness and complexities of qualitative data within any abstract category system.

DISCUSSION

In theorizing from qualitative data, the next step after categorization is to find meaningful relationships among the core and coded categories that help to explain the phenomenon of interest. As mentioned in the introduction, what seemed most remarkable to us and in need of explanation in the story of SEMATECH's founding and development was how cooperation emerged in a setting as competitive as the semiconductor industry. It was evident that the SEMATECH story revolved around several phenomena that are not new in organizational research—competition, cooperation, and change. What might be new is how these phenomena came together to influence SEMATECH's founding and early functioning. Our knowledge of the literature on change suggested several more streams of theory as relevant: work on self-organizing systems (Morgan, 1986; Weick, 1977) and a series of articles published in *Human Relations* on dissipative structures (Gemmill & Smith, 1985; Leifer, 1989; Smith & Gemmill, 1991). As we followed the leads this literature offered, we came upon an overarching framework, com-

plexity theory. This theory incorporates the specific streams noted into an explanation of radical changes in large systems and, in particular, of how such changes tend to create greater complexity than previously characterized the systems.

Complexity Theory

Prigogine pioneered the systematic description of how ordered systems arise from apparent chaos with his work in physical chemistry. No small part of the reason he was awarded the Nobel Prize in 1977 is that he also understood the wide-ranging philosophical implications of his discoveries—for example, that they offered a new way of understanding how systems emerge in ways and with patterns that are not intended. Other researchers (Jantsch, 1982; Weick, 1977) extended this understanding into social processes by studying their emergent orders as self-organizing systems in which innovative cultural patterns and increasingly complex structures repeatedly emerge. These structures may stabilize, continue to evolve, self-destruct, or do all three in cycles. The central message of complexity theory is that the self-organizing of complex ordered systems from apparent chaos does happen, all the time, all around, even when it is misunderstood, unappreciated, or unwanted.

Complexity theory fitted our data on the development of SEMATECH in important ways.

First, the theory describes many of the ways in which order can arise out of apparent chaos. This phenomenon has been described in physical systems, such as chemical solutions (Nicolis & Prigogine, 1989; Prigogine, 1981, 1984), in natural systems, like biological evolution (Kauffman, 1990), and in social systems (Axelrod, 1984; Jantsch, 1982). SEMATECH was conceived in an industry in decline and disarray, if not complete chaos; we refer to this condition as irreversible disequilibrium and discuss it in detail in the next subsection.

Second, complexity theory describes the dynamics of a self-reinforcing system—one that repeatedly builds on the results of interactions within it to achieve a more richly ordered complexity rather than repeatedly damping its own effects to remain simple and straightforward. Each self-reinforcing repetition or set of interactions contains more possibilities than the one before, so the system amplifies itself and expands. SEMATECH certainly developed many self-reinforcing processes, described in the Results section, from its internal and external interactions; we describe these developments under the term, self-organizing processes.

Finally, according to complexity theory, unpredictability, novelty, and a chance for something new to emerge accompany expansion (Wheeler, 1990). What emerges is qualitatively different from its origins, not just larger, because when many previously separate elements begin to interact as a system, the whole may behave in new and unpredictable ways. SEMATECH

certainly constituted something new in the world.¹⁷ The founding and activities of this consortium, although not entirely unprecedented, have encouraged a new and apparently irreversible level of cooperation within a highly competitive industry. The sheer size of the contributions made by each member company and the federal government ensured that some kinds of changes would take place to justify those investments. Furthermore, the results of the consortium's founding and activities were highly unpredictable. Many observers predicted failure, and many skeptics still question what the consortium has accomplished. We discuss these points further in a subsection below entitled "A New Order."

Irreversible Disequilibrium

It may have only been because the leaders of the semiconductor industry feared its demise in the mid 1980s that they opened themselves up to the possibility of radical change. The "obituary" delivered by Sandy Kane demonstrated a growing consensus that the situation in the industry was so severe that some members of the community did not see returning to the "original set of equilibrium conditions" as possible (Smith & Gemmill, 1991: 705).¹⁸ They had reached what complexity theorists call a bifurcation point, or a point of singularity, a juncture that allows inherent tendencies toward equilibrium to be overcome (Leifer, 1989). Because of the instabilities and turbulence that led to the critical condition marking the bifurcation point, the semiconductor industry needed to operate qualitatively differently than it had in the past.

According to complexity theory, a bifurcation point ushers in a period of disequilibrium that reflects a break with the past and requires the participants in a system to "decommit" themselves from existing processes and values (Leifer, 1989). In the case of SEMATECH, participants turned away from values associated with cutthroat competition, secrecy, and proprietary standards. In the process, members committed themselves to facing the unknown, which included questions of whether cooperation would lead to the recovery of the industry and how to achieve cooperation within a consortium.

Self-Organizing Processes

The events and activities described in terms of Giddens's (1984) concept of structuring in our Results section seem to fit even better various theorists' descriptions of self-organizing processes. Early activities and events within SEMATECH spawned new patterns of activities and events that in turn yielded the activities and events that followed.

The SEMATECH example, however, departs somewhat from typical

¹⁷ MCC, a computer industry consortium, was established before SEMATECH, but its operations and structure were markedly different from the latter's.

¹⁸ It also drew IBM into the semiconductor manufacturing community in a way that was unprecedented.

conceptions of self-organizing processes, which usually involve generating new structures from elements within a system (Smith & Gemmill, 1991). What happened at SEMATECH was that people often created structures within the organization by borrowing practices from outside, primarily from member companies and the supplier industry. We want to point out, however, whether structuring elements in a self-organizing system are seen as coming from inside or outside a system obviously depends on how boundaries are drawn.¹⁹ SEMATECH was an organizational system with very porous boundaries operating within a larger industry system. At the industry level, most of the inputs were from within the system, but at the organizational level, many came from the outside. Also, most innovative structuring within any system is probably at least a partial imitation of something someone in the organization has seen somewhere else, making the sources of practices doubly unclear.

These distinctions aside, the SEMATECH case contributes to fleshing out the concept of self-organizing by showing (1) how systematically members searched the industry for the best practices to use internally and as models for the industry and (2) how members and suppliers were willing to give their knowledge to this cooperative effort.

Another exceedingly important element in SEMATECH's self-organizing process was the nondirective leadership style its early top management team used. CEO Bob Noyce was clearly an influential articulator of the mission and an inspiring role model at SEMATECH, but he seldom established structures.²⁰ Most treatments of founding leaders have assumed they both inspire followers and structure their organizations (Schein, 1992: 228–253). In an analysis of charismatic leaders, however, Trice and Beyer (1986) concluded that charismatic leaders tarnish their charisma when they become involved in practical affairs because it grows partially from followers' seeing them as exceptional and in touch with a higher plane than the everyday. Noyce exerted a powerful influence over people connected with SEMATECH, but he avoided exerting direct control by delegating administrative detail. When Noyce was CEO at Intel, our informants told us, Andy Grove handled most administrative matters for him. At SEMATECH, Turner Hasty filled this role. Noyce's avoidance of detail allowed his charisma to grow and flourish.

Noyce's nondirective leadership style also created opportunities for others to structure situations and activities according to needs. In this sense, SEMATECH became genuinely self-organizing. The consortium's viability was enhanced because people throughout the organization could "create structures that fit the moment" (Wheatley, 1992: 90). This flexibility and

¹⁹ Some analysts have suggested that organizational boundaries are increasingly in a state of flux compared to previous times (Rouleau & Clegg, 1992).

²⁰ Interestingly, a major structure he created, the Office of the Chief Executive, embedded his role in a team, other members of which could play the structuring roles.

fluidity allowed SEMATECH to modify structures it found useful and keep inventing new ones.

A New Order

Complexity theory suggests that, following a bifurcation point, an old system may disintegrate amid disorder to attain a more complex and appropriate alignment—a new order (Gemmell & Smith, 1985). To achieve a new order, the system must remain open to change and attract much new energy. The systems that emerge after bifurcation points have passed are called dissipative because of their ability to attract resources and skills in sufficient quantity to offset the potential disorganization stemming from new ways of operating (Leifer, 1989).

Our results showed that the founders of SEMATECH came to recognize that a new order was required in their industry to avoid its demise. Their solution showed how open they were to radical change. They decided to do what they had never done before—to found a new organization form, previously unavailable to them because of legal restrictions, that would facilitate cooperation in solving common problems. They backed that decision up with substantial commitments of their own financial resources.

Not all the members of the founding group envisioned much of what happened subsequently. Thus those events were, in accordance with complexity theory, unintended to a degree. Three of the major unintended consequences were (1) a large portion (about half) of the consortium's resources was used to help the supplier industry through SEMI/SEMATECH rather than used directly to help SEMATECH member companies, (2) the consortium developed more commitment and cooperation than many members expected because free riding behaviors became discredited as both counter-normative and inimical to gaining full benefits from membership, and (3) the consortium's life was extended beyond its initial five years because of its members' perception of its success.

Although some of the founders of SEMATECH may have had helping the supplier industry as an ideal, others did not. The pursuit of this mission and the addition of SEMI/SEMATECH as a sort of collateral organization also had the unintended consequence of making SEMATECH more complex than originally envisioned. Few of the hardheaded managers in the founding group were idealistic enough to fully intend the last two consequences. There were plenty of skeptics at every step, but their skepticism was gradually overcome. Some of the founding companies understandably adopted a wait-and-see policy toward SEMATECH, but most were eventually drawn into the cooperative system that emerged.²¹

Another correspondence between events at SEMATECH and complexity

²¹ Our informants indicated that the companies that left SEMATECH after the initial five years did so because they were further back in the technology chain than other member companies and could not put SEMATECH's research and testing to immediate use.

theory is the way in which the consortium's emergence depended on inputs of new energy. One set of important inputs came from the many individuals who contributed their efforts in the early years. We suggest the unconditional contributions of Charlie Sporck and Bob Noyce were critical. Sporck worked full time gaining commitments from his peer CEOs in the semiconductor industry to form SEMATECH.²² Noyce, who gave up his retirement to take over as CEO when it became evident that Congress would not fund the consortium without an acceptable CEO in place, perhaps gave the ultimate gift, dying of a heart attack while CEO of SEMATECH. These high-level inputs helped to set a norm for cooperation and giving that was necessary to get the new organization off the ground.

However, as pointed out earlier, normative behavior alone is insufficient to explain a cooperative system (Kondo, 1990). Something must give the system a boot to set the norms in motion (Maruyama, 1963). That something is often one or more cultural leaders who "originate or recognize rationales that will reduce people's uncertainties, make them understandable and convincing, and communicate them widely so that others come to share them" (Trice & Beyer, 1992: 151). Sporck, Noyce, and others were cultural leaders who provided such inputs.

But clearly, in SEMATECH's case the matching funding from the federal government was also a necessary, if not sufficient, input. Although the semiconductor firms did not really want government involvement, early planning indicated that they could not afford to commit all the revenues required.

Complexity theory can not yet account for the sources and patterns of energy inputs needed to lead a system toward a new order. What our results show is that such inputs can come from many sources. They also show a rather surprising pattern of member firms' implicitly taking turns, contributing resources as they were needed. In this respect, our results support Ring and Van de Ven's (1994) contention that contributions are not necessarily calculated, equal exchanges. Complexity theory also fails to specify the sources of energy inputs. Our data dramatize and strongly support the contention that these energy inputs must in good part come from the efforts of key individuals, again supporting Ring and Van de Ven's analyses.

Other Implications for Research and Practice

The perspective on organizations provided by complexity theory contrasts sharply with that provided by systems theory. Complexity theory says that the internal processes of organizations can generate radical change, while systems theory posits that internal processes tend toward homeostasis. More organizational applications of the model are needed to determine the value of complexity theory as a framework for understanding and analyzing organizational change. It is clear that complexity theory fits and helps

²² As mentioned earlier, Sporck was CEO of National Semiconductor and turned over its operation to his vice presidents for about a year to sell the idea of a consortium to his peers.

to illuminate this research case. It remains to be seen how much value this general framework will have for future research. The turbulence of the environments that many organizations currently face and the radical changes that many are making to try to adapt to that turbulence suggest that this framework has relevance for future research and may be applicable to many more instances of organizational change.

Our results suggest that the interdependencies involved in interorganizational arrangements can pay off, but some initial degree of trust and someone to start the contributions flowing are needed (Mauss, 1967). Our results also show that, as Argyle (1992) suggested, cooperation is easier among peers. SEMATECH exemplified this suggestion by structuring interactions so that they would take place among persons at the same organizational levels. SEMATECH's management formed countless committees and task forces to do this at every level of the organization. Peer-level communication was achieved primarily through meetings, and SEMATECH took care to be sure that its members were trained in proven meeting management and participation techniques. As Grove (1983) pointed out, meetings are where the business of an organization takes place and where individuals take the risk of giving views to the group to achieve a joint effort. This giving is an act of trust that must meet with success if the organization's meetings are going to have a reputation for being worthwhile.

The data from this research show that sequences of contributions do not necessarily follow an exchange model in which inputs yield outcomes of a value equal to inputs for all parties, but instead may conform to the oldest assumption of trust—that it is almost impossible for everyone to get equal value at all times, that people need to have faith that their efforts will be rewarded at a later, undefined time, and that these choices to offer and risk are matters of individual honor and pride.

The data from SEMATECH also illustrate the difficulties that some styles of leadership can create for efforts at cooperation. In particular, an overbearing style, such as William Shockley, founder of Shockley Semiconductor Laboratories, is said to have had (Rogers & Larson, 1984), and a penchant for unilateral, secretive decision making, such as Paul Castrucci exhibited at SEMATECH, undermine cooperative efforts. Such behaviors can, however, galvanize cooperative efforts in others. Shockley's overbearing style led bright young engineers and scientists to leave and become the "Fairchildren"²³ who colonized Silicon Valley (Rogers & Larson, 1984). Castrucci's behaviors led to the formation of the Investment Council at SEMATECH. Sometimes problems create new solutions that would not otherwise have surfaced.

The leadership that galvanized effort at SEMATECH was established

²³ This term, of unknown coinage, evokes the parental role of Fairchild Semiconductors in socializing employees who carried some of that firm's values and practices into companies they joined subsequently.

through visible and highly symbolic actions. In this instance, the organization had the advantage of having a charismatic leader—an advantage all organizations cannot count on—but other leaders can adapt the care Noyce devoted to symbolism and the participative and democratic management style he used to other organizational settings.

CONCLUSIONS

The successful founding and continued viability of SEMATECH demonstrate that cooperation between competitors can be achieved under certain conditions. The presence and activities of SEMATECH have not eliminated competition in this industry. Rather, SEMATECH has provided a sort of neutral ground on which "blood enemies" can cooperate within certain agreed-upon boundaries. The consortium has become the symbol and the catalyst for many cooperative efforts. Complexity theory helps to explain how small, discrete events can have large consequences. Individual contributions became self-amplifying in this case because they gave birth to a moral community and created structures that in turn created other structures. Initial disorder made innovation mandatory, and the egalitarian culture Noyce and others created allowed innovation to flourish.

Complexity theory also highlights the importance of an initial crisis or state of chaos that marks a break with the past and stimulates openness to radical new ideas. Members of the semiconductor industry knew that they could not continue to prosper unless they drastically changed their practices. Such recognition, relatively rare in organizations and industries, seems to be a necessary precursor to radical change. In this and other ways, SEMATECH is an unusual example. Clearly, complexity theory would not inform all instances of change.

Ring and Van de Ven (1994) argued that a central question for organizational theory is how interorganizational relationships emerge and grow over time and that understanding such relationships requires a focus on sequences of events and interactions among organizational parties. This study had such a focus. Our results indicate that, as Ring and Van de Ven predicted, trust is important for establishing and maintaining such relationships. Our data also demonstrate the crucial importance of individual efforts; as Ring and Van de Ven wrote, "These relationships only emerge, evolve, grow, and dissolve over time as a consequence of individual activities" (1994: 95).

Other factors were undoubtedly crucial in the founding and sustaining of this consortium: the key actors' conviction that something had to change, the fear and pain the leaders of the U.S. semiconductor industry were experiencing as they watched its market share drop, the emergence of a charismatic leader who could inspire unusual efforts and cooperation, and the faith and courage of the many consortium participants who worked tirelessly to realize the mission set for them. These conditions describe an outlier case, at least so far as previous organizational research is concerned. How unusual such cases will be in the future remains to be seen.

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APPENDIX

Chronology of Important Events at SEMATECH^a

- 1971 Semiconductor Equipment and Materials Institute (SEMI) formed by U.S. industry suppliers, goes on to become international.
- 1977 Semiconductor Industry Association (SIA) formed by five merchant chipmakers: LSI Logic, Intel, Advanced Micro Devices (AMD), National Semiconductor, and Motorola.
- 1982 Semiconductor Research Corporation established by the SIA to do collaborative research and support education in silicon-related areas.
- 1984 National Cooperative Research Act passed, exempting joint research and development projects from treble damage and per se rules of antitrust law.
- 1985 Global market share of U.S. semiconductor manufacturers at lowest point.
- 1986 June: SIA commissions Charlie Sporck to poll members about a collaborative effort.
- 1986 November: SIA forms a steering committee, coins the acronym SEMATECH (from semiconductor manufacturing technology), began lobbying for government support, and stepped up lobbying for trade sanctions against Japanese dumping to buy time.
- 1986 December: Defense Science Board task force report on U.S. semiconductor dependency leaked. Report called for a semiconductor manufacturing technology institute, with collaboration between government and industry.
- 1987 March: in offices donated by National Semiconductor in Santa Clara, California, the SIA-appointed steering committee names task forces for operational planning and developing the Black Book. First 22, then 44 assignees from potential SEMATECH members begin working on plans.
- 1987 May: SIA adopts the *Black Book* and a business operating plan for the consortium, sets technological objectives for phases 1–3.
- 1987 June: kickoff for a series of industrywide technology planning workshops to run through early 1988. Lobbying for government support, industry membership recruitment, negotiations on antitrust and intellectual property issues all intensify. Difficulty negotiating participation agreement.

- 1987 August: SEMATECH incorporates with 13 semiconductor manufacturing member companies. (One more firm joined in 1988.)
- 1987 September: Separate SEMATECH board formed, SEMI/SEMATECH established, with seat on SEMATECH's board. Work begun on formation of representative technical advisory boards.
- 1987 December: Legislation authorizing federal funding through the Department of Defense.
- 1988 January: Selection of Austin, Texas, as site announced.
- 1988 March: First executive technical advisory board meeting held in Austin.
- 1988 April: Move from Santa Clara to Austin and recruitment of assignees and direct hires.
- 1988 July: CEO Bob Noyce and COO Paul Castrucci named by board; Peter Mills brought in as CAO by Noyce.
- 1988 September: Centers for Excellence started.
- 1988 November: Fabrication facility dedicated, built in record 32 weeks.
- 1988 Major reorganization effort begins at the top of the organization, leading to a February 1989 conference with bottom-up manager feedback. Decision made to focus on suppliers. Meeting management training and restructuring to bring objectives into line with budget, new supplier focus, and job descriptions.
- 1988-89 Castrucci wheeling and dealing for equipment, GAO investigation begun, Investment Council established.
- 1989 March: First fully processed wafers produced in new fabrication facility; 100 integrated tools brought into production; Castrucci resigns, Hasty becomes COO.
- 1989 November: Supplier Relations Action Council established to set partnering guidelines; task force to address total quality management established.
- 1989 First quarter: Phase 1 achievement, 64 kilobit SRAMs, with the manufacturing technological ability to etch 0.8-micron "feature lines" on a chip.
- 1990 Programs to develop or qualify equipment established in four major technology areas: lithography, furnace and implant, multilevelled metals, and manufacturing methods, processes, and systems.
- 1990 Partnering and quality task forces combined in PFTQ.
- 1990 June 1: Bob Noyce Day, a celebration in Austin; June 3: Noyce dies suddenly.
- 1990 PFTQ self-tests and guidebooks delivered, training workshops begun.
- 1990 November: Bill Spencer becomes CEO.
- 1990 Threatened nonrenewal of government funding, linked to defense cutbacks.
- 1990 Three members announce nonrenewal. Reorganization effort, with new formulas for establishing return on investment and an emphasis on members' determining agendas, including a master list of 58 "deliverables," more directly related to their needs.
- 1990 Third quarter: Phase 2 accomplishment, a 0.5-micron feature line etched on a silicon chip, a global benchmark.

- 1991 March: Frank Squires from Xerox becomes CAO; Bill George from Motorola becomes COO.
- 1992 January: Government funding renewed for next five years. Ties to national labs, the National Institute of Standards and Technology, and SRC strengthened as defense conversion begins.
- Announcement of new mission reflecting the industry's restored competitive position: "Create fundamental change in manufacturing technology and the domestic infrastructure to provide U.S. semiconductor companies the continuing capability to be world-class suppliers."
- SEMI leader Sam Harrell named as first executive chief strategy officer.
- 1993 January: Achievement of 1992 phase 3 goal, a 0.35-micron feature line. The slogan "On target, on time, together" announced.
- 1993 March: Participated in development of national technology roadmap.
- 1993 Announcement of a new thrust area, environmental issues in semiconductor manufacturing.
- Implementation of new five-year horizon for developing computer modeling, simulation, and computer-aided manufacturing technologies.
- 1994 COO Bill George returns to Motorola, new COO Jim Owens arrives from National Semiconductor.

* Where no month is given, the activity noted occurred throughout the year.

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STUDIES OF INDIVIDUALISM-COLLECTIVISM: EFFECTS ON COOPERATION IN GROUPS

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Data from 492 college students indicated that group size and individuals' identifiability, sense of shared responsibility, and levels of individualism or collectivism influenced peer-rated cooperation in classroom groups. Levels of individualism or collectivism moderated the effects of size and identifiability on cooperation but not those of shared responsibility. These findings suggest that models of free riding and social loafing provide insights into individualistic cooperation in groups but are limited in their ability to explain the cooperation of collectivists.

Cooperation, defined as the willful contribution of personal effort to the completion of interdependent jobs, is essential whenever people must coordinate activities among differentiated tasks. Barnard (1938), who was one of the first modern organization theorists to recognize this requirement, deemed it crucial to the survival of a social unit that its members induce each other to behave cooperatively. Other theorists influenced by Barnard (e.g., March & Simon, 1958; Simon, 1947; Thompson, 1967) later incorporated similar ideas into many of today's archetypal models of organization and organizational behavior. As a result, cooperation is now a fundamental concept in the organization sciences, as evidenced by the articles appearing in this special issue of the *Academy of Management Journal*.

Despite the conceptual importance of cooperation, one must look outside the organization sciences to find long streams of theory and research concerning cooperation in the kinds of groups found in current-day organizations. In one such stream, researchers in economics and social psychology have investigated the behavioral patterns termed free riding and social loafing (Latané, Williams, & Harkins, 1979; Sweeney, 1973). Studies in this domain have sought to identify factors that might curb noncooperative tendencies and instead encourage cooperation in groups (Kerr & Bruun, 1983; Marwell & Ames, 1979). Over a hundred published analyses have resulted.

In another area of investigation, a number of social scientists have commented on the individualistic leanings of many current-day theories of social cooperation and human behavior (e.g., Hogan, 1975; Spence, 1985). Some have speculated that the presence of collectivity-oriented proclivi-

Blair Svendsen assisted in collecting and coding the data used in this study.

ties—collectivism—might stimulate cooperation in ways not envisioned in most research (Sampson, 1977, 1978). Others have suggested that models based on individualistic assumptions might prove unable to explain the personal or social behaviors of people holding collectivist viewpoints (Lykes, 1985; Shamir, 1990).

During the most recent decade, a few organization scientists have noted the relevance of these bodies of research to researchers interested in understanding the behaviors of individuals and groups in organizations (e.g., Albanese & Van Fleet, 1985; Jones, 1984; Wagner & Moch, 1986). In addition, several organizational researchers have borrowed from one or both streams to pursue various questions (e.g., Earley, 1989, 1993; Weldon & Gargano, 1985). However, investigation into cooperation in groups, particularly where that cooperation is influenced by variations in group members' levels of individualism or collectivism, has yet to develop into a significant domain of organizational research. The present article is intended to help stimulate interest in such development.

INDIVIDUALISM-COLLECTIVISM AND COOPERATION

Individualism-collectivism is an analytical dimension that captures the relative importance people accord to personal interests and to shared pursuits. As defined by Wagner and Moch (1986), individualism is the condition in which personal interests are accorded greater importance than are the needs of groups. Individualists look after themselves and tend to ignore group interests if they conflict with personal desires. The opposite of individualism, collectivism, occurs when the demands and interests of groups take precedence over the desires and needs of individuals. Collectivists look out for the well-being of the groups to which they belong, even if such actions sometimes require that personal interests be disregarded.

In the social sciences, evidence of the distinction between individualism and collectivism can be detected as far back as Aristotle's critique of the collectivist vision of Plato's *Republic*, in his own individualist-leaning *Politics* (King-Farlow, 1964). Pathbreaking discussions of concepts similar to individualism and collectivism can also be found in the European sociology of the late 1800s, wherein Toennies differentiated the *gesellschaft* society of temporary relationships from the *gemeinschaft* community of shared obligations and irreducible ties (Cahnman, 1973). Similarly, Weber (1947) differentiated the emergent, associative relationships that flourish in societies from the traditional, communal relationships that thrive in communities. At about the same time, Durkheim (1933) distinguished between organic solidarity, growing out of the necessity for dissimilar specialists to form temporary relationships to perform work requiring broad-ranging skills, and mechanical solidarity, originating in the physical similarities and affective bonds shared by the members of kinship groups or communities. Weber (1958) also described how Protestantism had given rise throughout western Europe to increasing self-reliance and a growing focus on the pursuit of personal interests.

Growing out of these and other classic origins, the distinction between self-orientation and collectivity-orientation was introduced to North American social scientists by Parsons, who described the former as existing when individuals are able to pursue private interests irrespective of their bearing on the interests of others, and the latter as occurring when obligations toward collective well-being are allowed to supersede the pursuit of personal gains (Parsons & Shils, 1951). European authors also updated the distinction between individualism and collectivism and reintroduced it in the contemporary social sciences to explain behavioral differences among societal cultures (Hofstede, 1980) as well as among individuals within a single societal culture (Silverman, 1971). In the United States, a large body of cross-cultural research developed as researchers compared people from predominately individualistic cultures, such as Australia, Canada, and the United States, and predominately collectivist cultures (Japan, Hong Kong, Korea, India, China, and Nigeria) in terms of motivation (Howard, Shudo, & Umeshima, 1983; Hui & Villareal, 1989), preferences for equity versus equality (e.g., Bond, Leung, & Wan, 1982; Hui, Triandis, & Yee, 1991), proclivities toward social interaction (e.g., Gudykunst, Yoon, & Nishida, 1987; Verma, 1985), and similar considerations. A small body of research also developed in which U.S. researchers examined the origins of individualistic-collectivistic differences within a single culture and investigated the effects of these differences on various personal and social outcomes (e.g., Breer & Locke, 1965; Cox, Lobel, & McLeod, 1991; Lykes, 1985; Wagner & Moch, 1986).

Although collectivism as defined in this research might seem similar to cohesiveness, commitment, or conformity, the latter concepts rest on the assumption that person-group relationships are temporary and based on momentary agreement or passing attraction. In contrast, collectivism is an orientation toward person-group relationships in which such relationships are looked at as being far more permanent and central. A heuristic I suggested in earlier research (Wagner, 1982) is useful in appreciating the depth of this distinction: an individualist acts as though he or she defines self as an entity consisting of a single person, bounded by his or her skin, but a collectivist acts as if he or she defines self as an entity extending beyond the individual to include a particular group of others, bounded by the social perimeter of that group. Thus, selfishness for an individualist implies attention to personal pursuits and inattention to group interests, but selfishness defined in the manner of a collectivist connotes attention to group interests and inattention to personal desires.

Thinking about the implications of these differences in self-definition suggests that variations in individualism-collectivism should influence personal tendencies to cooperate in group situations. For individualists, whose self-definitions arouse interest in the pursuit of personal gains, cooperation should prove attractive only if working with others leads to the attainment of personal benefits that cannot be obtained by working alone. In all other instances, cooperative contributions to group performance and well-being have the effect of diminishing personal resources that can be directed toward

more personally satisfying pursuits. Under these circumstances, individualists are likely to prefer to avoid cooperation and instead devote their attention to the pursuit of personal gains. In contrast, cooperation is consistent with the self-definitions of collectivists who favor the pursuit of group interests. In attending to group performance and well-being, collectivists are likely to seek out and contribute to cooperative endeavors that benefit their groups, irrespective of the immediate personal implications of these endeavors (Spence, 1985; Wagner, 1982).

Evidence supporting this line of reasoning can be found in four cross-cultural analyses, two by Gabrenya, Latané, and Wang (1981, 1983), and two by Earley (1989, 1993). Both studies by Gabrenya and colleagues compared the performance of U.S. and Chinese students, and both studies also compared the performance of Chinese students working alone and in groups. In the first study, Gabrenya and colleagues (1981) found that transfer students in the United States who came from China, a collectivist nation, produced more working together than working alone. In their second study, however, the researchers discovered that students from China who were tested in their homeland produced more working alone than working together (Gabrenya et al., 1983). In contrast to these mixed findings, both of Earley's studies showed no significant reduction of productivity in groups of Chinese collectivists, and a noticeable amount of reduction in groups of people from the United States, an individualistic nation. Earley attributed these findings to the positive effects of cultural collectivism on cooperation in groups.

Overall, the strongest evidence indicates that members of collectivist national cultures frequently opt to cooperate in groups, especially when cultural traditionalism is favored over modernity (Hsu, 1970; Yang, 1981) and when they are working in in-groups of close associates (Earley, 1993), but that members of individualistic national cultures show a marked tendency to avoid cooperation (Gabrenya et al., 1981, 1983). To the extent that a similar distinction exists among individuals in a single society, the findings of cross-cultural research suggest that

Hypothesis 1: Individualism-collectivism will influence cooperation in groups in such a way that collectivists will cooperate more than will individualists.

FREE RIDING, SOCIAL LOAFING, AND COOPERATION

Free riding is a choice individuals sometimes make to avoid cooperating in the pursuit of rewards to be shared by the members of a group, organization, or society, while expecting to derive personal benefit from those rewards, acquired through others' efforts. To the extent that free riding actually leads to reductions of individual effort, joint performance may be depressed and shared rewards may not be acquired. Social loafing is the tendency to exert less effort when working with others than when working alone (e.g., Latané et al., 1979). Social loafing differs conceptually from free

riding in that the latter grows out of rational calculation but social loafing can occur without conscious awareness. As indicated below, however, research has suggested that the primary origins of social loafing are motivational. Therefore, free riding and social loafing are analogous in source and effect: both grow out of the same choice to withhold cooperative effort from group endeavors, and both have the same potential to jeopardize group performance and well-being (Kidwell & Bennett, 1993).

Free Riding: Effects of Group Size

Analyses of free riding can be traced to Samuelson (1954), who first identified various problems inherent in providing societies with collective consumption goods, now called public goods. Such goods can be consumed by all societal members if they are available and denied to none because of their intrinsic indivisibility. Public goods include clean air and water, a common language, and a shared government. They also include the reward structure and stable employment shared by the members of an organization, the friendships and interdependence shared by the members of a group, the sense of security and common identity shared by the members of a family, and so forth.

As Olson (1965) noted, a chief implication of Samuelson's work is that public goods invite free riding, since their indivisibility makes it possible for free riders to derive benefit without personal cost. Yet this property threatens the provision of public goods, because people who might otherwise devote effort to their acquisition are likely to choose instead to free ride. For some individuals, this choice is a matter of rational maximization, since being able to consume public goods without contributing personal resources enables them to direct untapped resources elsewhere and gain even more for themselves. For other individuals, the choice to free ride grows out of a phenomenon that Kerr (1983) labeled the "sucker effect": if surrounded by others likely to free ride, an individual not otherwise inclined may also choose to free ride in order to avoid the inequity of contributing more than the others for the same share of public goods. For both of these reasons, without corrective inducements public goods are unlikely to be obtained and everyone must do without (e.g., Olson, 1965).

Olson's observation stimulated research aimed at learning how social units might best stimulate cooperation, thereby controlling free riding and insuring the continued availability of public goods. Much of this research has focused on the effects of group size on free riding, because the presence of large numbers of co-actors can shield an individual's free riding and eliminate fears of corrective retributions but few co-actors make behaviors evident and more easily punished. Some studies (Alfano & Marwell, 1980; Chamberlin, 1978; Isaac & Walker, 1988; Marwell & Ames, 1980; Sweeney, 1974) have shown size to exert direct or mediated effects on free riding in the manner Olson proposed. However, other studies have failed to reveal evidence of a meaningful association between size and free riding (Marwell &

Ames, 1979; Tillock & Morrison, 1979), and questions have been raised about the conceptual framework underlying Olson's original prediction (Chamberlin, 1974; Smith, 1975; Sweeney, 1973). Despite these reservations, research on free riding is normally interpreted as showing that group size plays at least a modest role in shaping an individual's choice to engage in cooperative behaviors (e.g., Albanese & Van Fleet, 1985; Jones, 1984). Thus,

Hypothesis 2: Group size will influence cooperation in groups in such a way that the members of small groups will cooperate more than will the members of large groups.

Social Loafing: Effects of Identifiability and Shared Responsibility

Research on social loafing originated with an experiment by Ringelmann (1913) in which individuals were compared with groups on a rope-pulling task (Kravitz & Martin, 1986). The Ringelmann experiment later stimulated a study by Ingham, Levinger, Graves, and Peckham (1974) that prompted additional interests among social psychologists. In the resulting analyses (e.g., Harkins, Latané, & Williams, 1980; Kerr & Bruun, 1981; Latané et al., 1979) researchers found that increasing the number of workers performing a task reduced the average individual effort devoted to task performance. The label "social loafing" was applied to this effect.

Because Ingham and colleagues (1974) ruled out coordination difficulties as a primary source of social loafing, later research has focused instead on motivational origins. Some of this research has suggested that tendencies toward social loafing are influenced by identifiability (also called observability, anonymity, accountability, and task visibility), which involves the degree to which others can observe and assess an individual's behaviors (George, 1992; Harkins & Szymanski, 1988; Szymanski & Harkins, 1987). Researchers have considered a variety of masking agents, including group size, as discussed above, personal deceit, and the absence of a reliable performance assessment mechanism. Like those investigating free riding, they have found that the ability to mask personal behavior encourages social loafing (George, 1992; Harkins & Petty, 1982; Weldon & Gargano, 1988). Thus,

Hypothesis 3: Identifiability will influence cooperation in groups in such a way that members perceiving themselves as having a high level of identifiability will cooperate more than those perceiving a low level of identifiability.

Research has also suggested that shared responsibility (also called felt dispensability) has effects on social loafing. Shared responsibility is a variable that reflects the changes in feelings of personal responsibility that individuals in a group sometimes experience as a result of the presence of other members (Darley & Latané, 1968; Kerr & Bruun, 1983; Sweeney, 1973). In such situations, individuals may expect that others will accept most or all

of the responsibility for group performance. Members with feelings of reduced personal responsibility thus feel personally dispensable, believing that the group can succeed at its work without their personal input (Weldon & Mustari, 1988). In contrast, members retaining a sense of personal responsibility feel that their behaviors can make the difference between success and failure for their group. In this manner, strong feelings of shared responsibility reduce personal proclivities to engage in cooperation, and weak feelings of shared responsibility may encourage such proclivities (Fleishman, 1980; Weldon & Gargano, 1985; Weldon & Mustari, 1988). Thus,

Hypothesis 4: Shared responsibility will influence cooperation in groups in such a way that members perceiving themselves to have a low level of shared responsibility will cooperate more than members perceiving a high level of shared responsibility.

A MODEL OF COOPERATION IN GROUPS

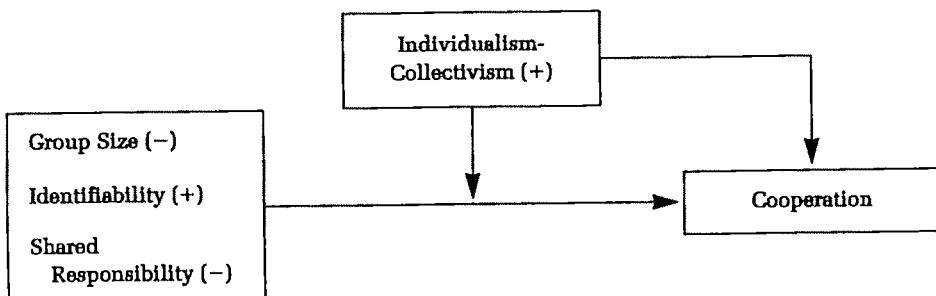
To recapitulate, research suggests that differences among people in level of individualism or collectivism are likely to affect their cooperation in groups, with greater collectivism stimulating greater cooperation. Studies of free riding and social loafing further suggest a model in which small group size, high identifiability, and low shared responsibility encourage cooperation.

Speculation also suggests that differences described by the individualism-collectivism dimension will moderate the degree to which group size, identifiability, and shared responsibility influence cooperation because those variables are all expected to affect cooperation by curtailing people's proclivities to pursue personal interests, a behavioral tendency likely to be exhibited by individualists but not by collectivists. Collectivists are likely to cooperate for reasons of collectivism—the definition of self they adopt and the priority they give to group well-being—irrespective of the effects of group size, identifiability, or shared responsibility. Consistent with this observation, I suggest

Hypothesis 5: Individualism-collectivism will exert moderating effects in such a way that group size, identifiability, and shared responsibility will have greater influence on the cooperation of individualists than on the cooperation of collectivists.

The purpose of this study was to assess the model, diagrammed in Figure 1, that is formed by the five hypotheses presented thus far. A secondary issue grew out of the recent proliferation of questionnaire measures of individualism-collectivism, three of which are currently used by organizational researchers. One of these, by Wagner and Moch (1986), is a three-dimensional instrument derived from an earlier measure by Breer and Locke (1965) that includes three items measuring individualist-collectivist beliefs,

FIGURE 1
Model of Hypothesized Relationships^a



* The signs in parentheses indicate the expected direction of zero-order relationships between independent variables and cooperation.

three assessing individualist-collectivist values, and four tapping individualist-collectivist norms. The second measure, by Erez and Earley (1987), is based on the work of Hofstede (1980) and is a single scale made up of four items measuring individualist-collectivist cultural values. The third measure, by Triandis and colleagues (Triandis, Bontempo, Villareal, Asai, & Lucca, 1988), includes a first dimension of 12 items assessing self-reliance and competitiveness, a second dimension of 10 items from Hui (1988) that tap concern for others in an in-group (e.g., friends, family, community), and a third dimension of 7 items assessing differentiation between individuals and their in-groups.

No single study has compared the three measures. Therefore, it is unclear whether they overlap enough to be considered synonymous, or if instead they access distinctly different aspects of individualism-collectivism and should be interpreted independently. If the measures are independent, it is not readily apparent which of them taps the aspects of individualism-collectivism having the kinds of effects hypothesized here. To deal with measurement issues of this sort, I conducted a factor analysis of the three measures and derived a multidimensional measure that was then used to conduct hypothesis tests.

METHODS

Data for this study were collected from undergraduate students enrolled in an introductory management course at a large midwestern university. All 541 students in the course were contacted at the beginning of a ten-week term and asked to provide data in return for course credit (the alternative of writing a two-page paper for equal credit was also offered), and 492 students (90.9%) chose to participate. Their average age was 21.3 years (*s.d.* = 2.3); 303 were men and 189 were women; 429 were white, 39 were black, and 24 identified themselves as belonging to other categories; 394 were college jun-

iors, 92 were college seniors, and 6 did not classify themselves; and their average self-reported grade point average was 2.9 (4.0 was the highest level; s.d. = 0.4).

Task and Measures

All participants signed waivers permitting access to all performance measures and grades recorded during the term. Participants also completed an initial questionnaire consisting of individualism-collectivism items and demographic questions. Fulfilling a normal part of the management course, students then formed case analysis groups and prepared an oral case report for presentation during the term.

Preparing for the presentation typically took 18–20 hours of students' working together closely as a group outside of class to interpret the case, apply course material, formulate a problem statement, and devise a suitable solution. Substantial interaction among group members was required to complete the preparation, and students developed strong expectations among themselves that all group members would participate in this process. Presenting the case report required further interaction, although of limited duration and intensity.

Immediately following presentation of their group's report, each group of students completed peer assessments that were an established part of the grade structure of the course. Near the end of the term, participants completed a second questionnaire that contained individualism-collectivism items plus questions about identifiability, shared responsibility, and various group attributes. From these sources, the following data were obtained.

Cooperation. Cooperation was measured by a peer assessment instrument consisting of a single page beginning with this paragraph:

You have 100 points to allocate among the members of your group according to their performance as group members during the preparation and presentation of your group's case analysis. Please allocate points in a manner reflecting the degree of cooperative effort exerted by each individual during the entire period of time your group worked on its presentation.

Following this introduction were blank lines that permitted students to list the members of their group, including themselves, and to allocate points among listed members.

Within groups, agreement about each individual's rating was quite high, as indicated by a reliability estimate of .91 (James, Demaree, & Wolf, 1984; Nunnally, 1978). I standardized this measure using z-transformation to compensate for the effects of different groups sizes (before standardization, a score of 50 indicated average performance by a member of a two-person group, a score of 33 indicated average performance by a member of a three-person group, and so forth). For the resulting standardized scores, larger values indicated higher levels of cooperation.

Group size. Group size was measured by self-reports in the questionnaire, all of which were verified by comparisons with course records.

Groups ranged from two to eight members, and sizes were coded without further transformation.

Identifiability. Three items in the second questionnaire measured self-reported identifiability: "My behaviors as a group member were readily observable to others in the group," "Others in the group could not tell whether I was doing what I was supposed to do," and "In the group, each member could tell whether other members were doing their fair share." Participants recorded their responses on seven-point Likert scales ranging from 1, "strongly disagree," to 7, "strongly agree." The second item was reverse-coded during scaling so that high ratings indicated high identifiability.

Shared responsibility. Three items in the second questionnaire measured perceptions of shared responsibility: "The members of the group shared the responsibility for getting things done," "I felt personally responsible for the productivity of the group," and "Members of the group sometimes didn't feel individually responsible for the performance of the group as a whole." Participants recorded their responses on the same Likert scale used for identifiability, and the second item was reverse-coded so that high ratings indicated high shared responsibility.

Individualism-collectivism. Measures of personal differences in individualism-collectivism were constructed from 43 items that appeared in both questionnaires. Of these items, 10 were from Wagner and Moch (1986), 4 were from Erez and Earley (1987), and 29 were from Triandis and colleagues (Triandis et al., 1988; Hui, 1988). Participants recorded responses to all items on the same seven-point Likert scale described above. Item responses were reversed as needed so that high ratings indicated stronger collectivism.

Factor analysis of data from the first questionnaire revealed an 11-factor solution that was reduced to 5 factors on the basis of a scree test of factor eigenvalues. Varimax rotation produced the factor weights shown in Table 1. As the table shows, factor 1 consisted of one item from Erez and Earley and four items from Triandis and colleagues that assessed personal independence and self-reliance; factor 2 incorporated five items from Triandis and colleagues that addressed the importance accorded to competitive success; factor 3 included two items from Wagner and Moch and one item from Erez and Earley that concerned the value attached to working alone; factor 4 was made up of the four items from Wagner and Moch that measured espousal of norms about the subordination of personal needs to group interests; and factor 5 consisted of the three items from Wagner and Moch that assessed beliefs about the effects of personal pursuits on group productivity.

Factor analysis of data from the second questionnaire replicated the same five-factor solution. The five individualism-collectivism measures used in this study were constructed from the results of this second factor analysis: items loading on a given factor were averaged, and this average then served as the score for the scale tapping that factor.

Control variables. Four demographic factors—age, gender (man or woman), race (collapsed into the dichotomy of white and all others), and

TABLE 1
Factor Analysis of Individualism-Collectivism Items

Items ^a	Collectivism Factors				
	1	2	3	4	5
1. Only those who depend on themselves get ahead in life ^b	.792				
2. To be superior a person must stand alone ^c	.458				
3. If you want something done right, you've got to do it yourself ^c	.619				
4. What happens to me is my own doing ^c	.407				
5. In the long run the only person you can count on is yourself ^c	.690				
6. Winning is everything ^c	.738				
7. I feel that winning is important in both work and games ^c	.738				
8. Success is the most important thing in life ^c	.695				
9. It annoys me when other people perform better than I do ^c	.503				
10. Doing your best isn't enough; it is important to win ^c	.681				
11. I prefer to work with others in a group rather than working alone ^d	.799				
12. Given the choice, I would rather do a job where I can work alone rather than doing a job where I have to work with others in a group ^d	.805				
13. Working with a group is better than working alone ^b	.804				
14. People should be made aware that if they are going to be part of a group then they are sometimes going to have to do things they don't want to do ^e	.684				
15. People who belong to a group should realize that they're not always going to get what they personally want ^e	.652				
16. People in a group should realize that they sometimes are going to have to make sacrifices for the sake of the group as a whole ^e	.752				
17. People in a group should be willing to make sacrifices for the sake of the group's well-being ^e	.704				
18. A group is more productive when its members do what they want to do rather than what the group wants them to do ^f	.736				
19. A group is most efficient when its members do what they think is best rather than doing what the group wants them to do ^f	.750				
20. A group is more productive when its members follow their own interests and concerns ^f	.756				
Factor eigenvalue	5.35	2.63	2.53	1.83	1.62

^a Items 1–10, 12, and 18–20 were reverse-coded to preserve consistent directionality, with high values indicating high collectivism.

^b Item from a scale developed by Erez and Earley (1987).

^c Item from factor 1 of an instrument developed by Triandis and colleagues (1988).

^d Item from the values scale developed by Wagner and Moch (1986).

^e Item from the norms scale developed by Wagner and Moch (1986).

^f Item from the beliefs scale developed by Wagner and Moch (1986).

year in school (junior or senior)—were included as control variables to suppress the effects of prospective rater biases on peer-rated cooperation. Also included was the grade point average earned in prior classes, to control for gross differences in ability. Table 2 reports means, standard deviations, reliability coefficients, and correlations pertaining to all the measures used in this study.

Design and Analysis

I performed moderated regression procedures (Stone & Hollenbeck, 1984, 1989) to control for the effects of exogenous demographic differences arising while assessing the main and moderator effects on cooperation of group size, identifiability, shared responsibility, and individualism-collectivism. In these procedures, the control variables of age, gender, race, year in school, and grade point average were regressed against cooperation in the first step of a hierarchical regression analysis. Next, I entered group size, identifiability, shared responsibility, and the five dimensions of individualism-collectivism to assess the main effects remaining. Then, first-order interactions were entered in a third step to examine the simple moderator effects present after the elimination of control and main effects. The regression analysis concluded with the entry of higher-order interactions that might have additional explanatory power. I assessed the statistical significance of the block of variables entered in each step with an F-test of the change in R^2 . Within significant blocks of variables, I appraised the statistical significance of the effect of each variable with a t-test.

RESULTS

Results of the moderated regression analysis, shown in Table 3, revealed that the five control variables had a statistically significant joint effect and that three—age, race, and grade point average—had their own statistically significant effects on ratings of cooperation. Whether because of rater biases or actual differences in behavior, participants rated older students, white students, and students with higher grade point averages as more cooperative.

Regression analysis results pertinent to Hypotheses 1–4 indicated that the block of main effects had a statistically significant joint effect on cooperation. Within this block, group size, identifiability, shared responsibility, and one of the five measures of individualism-collectivism, collectivism 1, had statistically significant effects on cooperation after effects of the control variables were accounted for. In support of Hypotheses 1–4, all these effects were in the expected direction: high collectivism, group smallness, high identifiability, and low shared responsibility all contributed to high cooperation.

The regression analysis also verified that the block of first-order interactions had a statistically significant effect. Within this block, collectivism 1 formed statistically significant first-order interactions with group size and with identifiability. In addition, a second measure of individualism-

TABLE 2
Descriptive Statistics and Correlations

Variables	Means	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Age	21.31	2.27														
2. Race*		.06														
3. Gender*		-.09	.13**													
4. Year in school*		.36**	.00	-.09												
5. Grade point average	2.89	0.39	.01	-.08	.08	-.05										
6. Collectivism 1	3.80	1.01	.01	.02	.05	.07	-.03									
7. Collectivism 2	3.94	1.07	.03	.06	.30**	-.01	-.03									
8. Collectivism 3	4.04	1.25	-.02	.03	-.06	.05	-.14**									
9. Collectivism 4	5.57	0.72	.03	.11**	.19**	-.03	-.04									
10. Collectivism 5	5.32	1.09	.07	-.02	.12**	.06	.10									
11. Group size	4.06	1.43	-.01	-.01	-.01	.01	.02									
12. Identifiability	5.51	0.83	.08	.10	.21**	.03	.12**									
13. Shared responsibility	4.92	1.29	-.10	.11	.06	-.08	-.08									
14. Cooperation	0.90	1.00	.15**	-.15**	.01	-.01	.18**									

*Correlations involving this variable are Spearman rank-ordered statistics. All others are Pearson product-moment statistics.

b Statistic is a coefficient alpha reliability estimate.

c Statistic is a Spearman-Brown prophecy estimate.

** p < .01

TABLE 3
Results of Moderated Regression Analysis: Effects on
Peer-Rated Cooperation

Step	R ²	ΔR ²	ΔF	Variables	β	t
1	.080**			Age	.177	3.59**
				Race	-.155	-3.33**
				Gender	.028	0.60
				Year in school	-.058	-1.17
				Grade point average	.165	3.58**
2	.159	.079	5.08**	Collectivism 1	.111	2.02*
				Collectivism 2	-.079	-1.45
				Collectivism 3	-.053	-1.12
				Collectivism 4	.051	1.03
				Collectivism 5	.008	0.17
				Group size	-.102	-2.25*
				Identifiability	.255	4.86**
				Shared responsibility	-.153	-3.03**
3	.235	.076	2.27**	Collectivism 1 × size	.538	2.07*
				Collectivism 1 × identifiability	-.887	-1.94*
				Collectivism 1 × shared responsibility	-.192	-0.69
				Collectivism 2 × size	-.259	-1.03
				Collectivism 2 × identifiability	1.060	2.35**
				Collectivism 2 × shared responsibility	-.133	-0.44
				Collectivism 3 × size	.581	2.67**
				Collectivism 3 × identifiability	-.365	-0.86
				Collectivism 3 × shared responsibility	.449	1.67
				Collectivism 4 × size	.906	1.88
				Collectivism 4 × identifiability	-.745	-1.34
				Collectivism 4 × shared responsibility	-.372	-0.86
				Collectivism 5 × size	-.290	-1.16
				Collectivism 5 × identifiability	.274	0.59
				Collectivism 5 × shared responsibility	-.044	-0.11
				Size × identifiability	-.503	-1.40
				Size × shared responsibility	-.156	-0.73
				Identifiability × shared responsibility	-.388	-0.98
4	.268	.033	1.14			

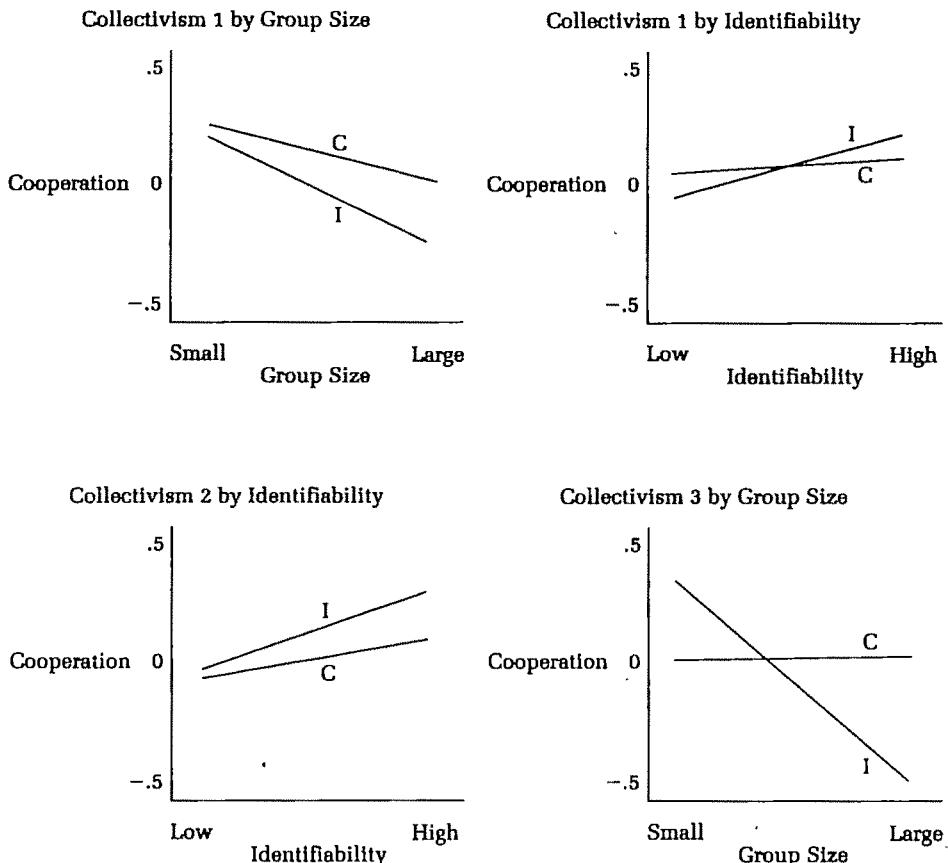
* p < .05

** p < .01

collectivism, collectivism 2, formed a statistically significant interaction with identifiability, and collectivism 3 interacted with group size to a statistically significant degree. Plots of these interactions, shown in Figure 2, showed that all were consistent with expectations specified in Hypothesis 5: high levels of collectivism attenuated the effects of group size and identifiability on cooperation. However, none of the five measures of individualism-collectivism formed a statistically significant interaction with shared responsibility. Hypothesis 5 thus received only mixed support.

None of the pairwise combinations of group size, identifiability, and shared responsibility produced evidence of statistically significant interaction effects. Tests of higher-order interactions also failed to produce evi-

FIGURE 2
Plots of Statistically Significant First-Order Interactions^a



^a In each figure, the individualist trend is marked "I" and the collectivist trend is marked "C".

dence of statistically significant effects. The reduced model consisting only of statistically significant control variables, main effects, interactions, and statistically nonsignificant main effects appearing in statistically significant interactions, yielded an R^2 of .19 ($F_{13,478} = 7.98, p < .01$).

DISCUSSION

Consistent with the findings of most prior research on free riding and social loafing, the results of this study support the hypotheses that small group size, high identifiability, and low shared responsibility are associated with greater cooperation in groups. This study's findings also indicate that differences in individualism-collectivism have main and moderator effects on cooperation in groups. In particular, the aspect of individualism-collectivism that concerns differences in personal independence and self-

reliance has a direct effect: individualists who feel independent and self-reliant are less apt to engage in cooperative behavior, and collectivists who feel interdependent and reliant on groups are more likely to behave cooperatively. The same aspect of individualism-collectivism also moderates relationships between group size, identifiability, and cooperation in such a way that group size and identifiability have greater effects on the cooperation of individualists than they do on the cooperation of collectivists. A second aspect of individualism-collectivism, differences in the importance attached to competition and personal success, also moderates the identifiability-cooperation relationship, and a third aspect, differences in the value placed on working alone, moderates the relationship between group size and cooperation. In both of these interactions, high collectivism reduces the influence of identifiability and size on cooperation.

In contrast to these findings supporting predictions, the present study failed to show that differences in individualism-collectivism among U.S. college students moderate the relationship between shared responsibility and cooperation. One interaction, between collectivism 3 and shared responsibility, came close to attaining statistical significance ($p < .10$), suggesting that improved measurement or perhaps other methods might produce findings supportive of hypothesized expectations. However, it is also possible that the null results of this study signal the existence of an additional, untapped dimension of individualism-collectivism that has the expected moderator effects. Or the results of this study might accurately reflect the absence of similar effects among Americans in general. Further analysis is required to weigh these possibilities.

Although college students served as the participants in the present study, the use of an ordinary classroom assignment (a graded presentation), a measure of cooperation that was perceived as routine (a customary peer evaluation), and a task that required sustained interdependence (a group project) seem to permit cautious generalization to other settings in which interdependent tasks are performed in groups. Allowed such generalization, the results of this study hold important implications for research on individualism-collectivism and group cooperation. One of these grows out of the results of the factor analyses, which indicate that the three measures by Wagner and Moch (1986), Erez and Earley (1987), and Triandis and colleagues (1988) are neither entirely synonymous nor completely independent. At a minimum, this finding suggests that researchers should exercise caution when attempting to reach cumulative conclusions on the basis of empirical studies that have used different measures of individualism-collectivism. It also provides support for the recommendation that multiple dimensions be measured in future research intended to assess the antecedents or consequences of individualistic-collectivist variation.

A second implication, drawn from the primary results of this study, parallels the observations of Sampson (1977, 1978, 1988), who criticized the individualistic leanings of many American theories of psychology and group

behavior. Central to Sampson's criticism has been the assertion that current social theories developed in the United States only partially represent the full range of human variability. Consistent with this assertion, the present study indicates that conceptualizations of cooperation that are based on free rider or social loafing models or on similar treatments of the social psychology of group behavior are limited in their applicability to collectivists.

This finding suggests the development of a more balanced stream of research on cooperation, perhaps one growing out of the realization that free riding and social loafing in the purest form represent individualism pursued to an extreme. What would a model of group cooperation look like if it also incorporated a description of collectivism pursued to an extreme? Perhaps it would include the possibility that overzealous collectivist concerns about group well-being could stimulate overcontribution to group endeavors, prematurely exhausting the resources of extremist members. If widespread among the membership of a group, such overcontribution and exhaustion might undermine the group's ability to look after its members, ultimately threatening the group's performance and continued survival. In such situations, the cooperative response might not involve making personal contributions to group endeavors but might instead consist of withholding some minimal reserve of effort in order to conserve one's resources and ensure long-term group viability.

Redirected research on cooperation might also deal with the paradox that collectivists whose cooperation outpaces the contributions of others in their groups are distinguishing themselves from their colleagues and becoming less collectivistic as a result. Paraphrasing a collectivist adage, being "the nail that sticks out," even for reasons intended to benefit group well-being, carries the liability of needing to be "hammered back in" to preserve the collectivist sense of self and group. Analyzing how groups of collectivists deal with this problem might suggest varieties of surveillance, control, and sense-making that influence collectivist cooperation in much the same way that factors such as group size, identifiability, and shared responsibility shape individualist behaviors.

In conclusion, this study substantiates the idea that variation in individualism-collectivism can have effects, within a single societal culture, on cooperation in groups, and that these effects can extend and modify the influence of factors often analyzed in research on free riding and social loafing. Do collectivist self-definitions induce a significant number of working Americans to cooperate with one another? Might work place collectivism thus supplement or even supplant many of the management procedures presently used to encourage cooperation in U.S. organizations? Do problems with overcontribution, exhaustion, and individuation, heretofore ignored because of the individualistic leanings of much existing research, undermine effective cooperation among Americans who hold collectivist self-definitions at work? The present study suggests that such questions merit serious attention in future research on cooperation in groups.

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ACKNOWLEDGMENT OF REVIEWERS FOR SPECIAL RESEARCH FORUM ON COOPERATION

Deborah Ancona	Marilyn Gist	Judy Olian
Philip Anderson	Curtis Grimm	Christine Oliver
Samuel Bacharach	Anil Gupta	Ben Oviatt
Wayne Baker	Richard Guzzo	Arvind Parkhe
Max Bazerman	Jerry Hage	Robin Pinkley
Schon Beechler	Kathryn Harrigan	Richard Priem
Janice Beyer	Jan Heide	Keith Provan
Allan Bird	Charles Hill	Vasudevan Ramunujam
Warren Boeker	Robert Hoskisson	David Ravenscraft
Daniel Brass	Duane Ireland	Elaine Romanelli
Rudi Bresser	Virod Jain	Harry Sapienza
Joel Brockner	Jose-Carlos Jarillo	Carl Scheraga
Philip Bromiley	Katherine Klein	Benjamin Schneider
John Butler	Richard Kopelman	Claudia Bird Schoonhoven
Albert Cannella	David Krackhardt	Michael Schuster
Paul Collins	Roderick Kramer	Sanjit Sengupta
Edward Conlon	Robert Krapfel	Paul Shrivastava
Richard D'Aveni	Guido Krickx	Henry Sims
Andre Delbecq	Rajesh Kumar	Ken A. Smith
Gregory Dess	Michael Lawless	Charles Snow
Robert Drazin	Carrie Leana	Robert Speckman
Irene Duhaime	David Lei	Gretchen Spreitzer
Jane Dutton	Dorothy Leonard-Barton	Timothy Stearns
Jeffrey Edwards	James Lincoln	Cindy Stevens
Kathleen Eisenhardt	Edwin Locke	Don Stockdale
Miriam Erez	John Michel	Susan Taylor
Sydney Finkelstein	George Milkovich	Dean Tjosvold
Robert Folger	Alex Miller	Beverly Tyler
Charles Fombrun	Aneil Mishra	Stefan Wally
James Fredrickson	Terence Mitchell	James Walsh
Martin Gannon	Richard Mowday	Gregory Young
Raghu Garud	Margaret Neale	Edward Zajac
Michael Geringer	Gregory Northcraft	Dale Zand

TRYING TO LOOK BAD AT WORK: METHODS AND MOTIVES FOR MANAGING POOR IMPRESSIONS IN ORGANIZATIONS

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Intentionally looking bad at work is a type of impression management in which employees purposefully attempt to convey unfavorable impressions. Drawing on the employment experiences of 162 individuals, we documented five forms of such behavior: decreasing performance, not working to potential, withdrawal, displaying a bad attitude, and broadcasting limitations. Motives for managing poor impressions were also documented. The management of poor impressions was discriminable from the management of favorable impressions and self-handicapping. We provide a preliminary framework for understanding the management of poor impressions.

Impression management has been defined as "any behavior that alters or maintains a person's image in the eyes of another and that has as its purpose the attainment of some valued goal" (Villanova & Bernardin, 1989: 299). Such behavior is believed to further the purpose of controlling the impressions others form of the individual engaging in the behavior (Wayne & Kacmar, 1991). As Leary and Kowalski (1990) noted, research in this area has been directed toward both impression construction, the strategies people use to manage impressions, and impression motivation, their motives for controlling others' perceptions. Organizational researchers have studied the role of impression management in attitude measurement (Arnold & Feldman, 1981; Booth-Kewley, Edwards, & Rosenfeld, 1992; Podsakoff & Organ, 1986), employee selection (Baron, 1986; Becker & Colquitt, 1992; Fletcher, 1990; Hough, Eaton, Dunnette, & Kamp, 1990; Kacmar, Delery, & Ferris, 1992), feedback-seeking (Morrison & Bies, 1991), supervisor-subordinate relations (Ansari & Kapoor, 1987; Deluga, 1991; Fandt & Ferris, 1990; Wayne & Ferris, 1990; Wood & Mitchell, 1981; Yukl & Falbe, 1990), performance evaluation (Kipnis & Schmidt, 1988; Shepperd & Arkin, 1991; Smith, Collins, & Buda, 1989; Villanova & Bernardin, 1991; Wayne & Kacmar, 1991), and organizational decision making (Elsbach & Sutton, 1992; Mazer, 1990).

We thank Mark Leary, Delroy Paulhus, Donna Randall, Peter Villanova, and this journal's reviewers for comments on earlier versions of this article. Also, we thank Jerry Goodstein, David Lemack, Steven Maurer, and Thomas Tripp for their help in data collection.

All the cited research emphasizes forms of impression management whereby individuals attempt to look good to someone else. However, it is also probable that people sometimes intentionally attempt to look bad—inept, unstable, or undesirable in some other sense. Work with mental patients has suggested that these individuals may try to appear unstable to limit the demands made on them (Braginsky, Braginsky, & Ring, 1969). In personality research, “faking bad” has received some attention (Furnham, 1990; Furnham & Craig, 1987; Furnham & Henderson, 1982), and Hartung (1988) asserted that “deceiving down” can be an adaptive behavior that is to an individual’s advantage. Social psychologists have explored the phenomenon of “playing dumb” as a means of managing the impressions of various others (e.g., Gove, Hughes, & Geerken, 1980), and Kowalski and Leary (1990) demonstrated that people will “depreciate” themselves, or present themselves less positively in order to avoid onerous tasks. Finally, in their review, Leary and Kowalski noted the following: “People sometimes present themselves in ways that are inconsistent with the target’s values. They may do so for example, when they want to alienate or avoid another person or maintain their sense of autonomy” (1990: 41).

Within the field of organizational behavior, the general perception seems to be that employees’ intentionally looking bad in a work setting is very uncommon. For instance, the notion that impression management behaviors are a subset of socially desirable responses (Zerbe & Paulhus, 1987) implies that the management of impressions is a means of looking good (socially desirable) rather than of looking bad. Another example of the research consensus is Hough and colleagues’ discussion of the management of poor impressions in a selection context; they concluded that “The likelihood of such distortion occurring in most applicant settings is remote. Circumstances in which a person is motivated to portray him- or herself negatively are probably specific to a draft (mandatory military service) or clinical setting (such as evaluation related to Worker’s Compensation claims)” (Hough et al., 1990: 593). Nevertheless, the authors acknowledged that their research did not address the extent to which the management of poor impressions occurs in ordinary work settings.

Indeed, there has been little research on the management of poor impressions in organizations. At this point researchers do not know whether or not such behavior occurs in real-life work settings or, if it does occur, its frequency. In addition, virtually no theory or evidence addresses the forms this kind of behavior might take or the motivations underlying intentionally looking bad in the workplace. These gaps in knowledge are important for two reasons. First, intentionally looking bad could have direct implications for individual and organizational effectiveness. As Leary and Kowalski pointed out, “Nothing in the impression management perspective implies that the impressions people convey are necessarily false (although, of course, they sometimes are)” (1990: 40). Thus, intentionally looking bad could indicate real job-related problems; for instance, one obvious way to attempt to look bad is to lower performance. Second, because managing poor

impressions involves employees influencing the perceptions of others, observers, such as managers, could easily make incorrect attributions regarding employee behavior. Their doing so could exacerbate the consequences of the employees intentionally looking bad. For example, without an understanding of the methods and motives for managing poor impressions, managers might misdiagnose employee performance problems.

The purpose of this study was to investigate people's methods and motives for intentionally looking bad in organizations. We also intended to build theory in the area by distinguishing the focal behavior from related constructs and developing a preliminary model of the management of poor impressions.

THEORY AND HYPOTHESES

Definition of Intentionally Looking Bad at Work

We conceived of intentionally looking bad at work as a form of impression management whereby an employee purposefully attempts to convey an unfavorable impression. For a behavior to be identified as an aspect of this form of impression management, we required that (1) the person engaging in the behavior believe that a specific person or group will see the behavior as bad and (2) the ultimate target of the behavior is that person or group. Our definition of intentionally looking bad excludes behaviors that involve looking bad to one person or group in order to look good to another person or group. It also excludes behaviors that involve looking bad in one sense in order to look good in another sense.

Does the Management of Poor Impressions Occur in Organizations?

There is some previous evidence that the management of poor impressions occurs in organizations. Kowalski and Leary (1990) employed a job simulation in which subjects were led to believe that either the better or worse adjusted of two workers would perform an onerous task. As predicted, subjects "self-depreciated" to a greater extent when the well-adjusted worker was to perform the task. This form of self-depreciation falls within the domain of managing poor impressions because Kowalski and Leary's subjects used self-depreciation in order to avoid a very unpleasant task, not to mask an attempt at looking good.

The literature on playing dumb (Dean, Braito, Powers, & Grant, 1975; Gove et al., 1980; Komarovsky, 1946; Wallin, 1950) supplies additional evidence that some employees intentionally look bad at work. Playing dumb involves an individual pretending to be less intelligent or knowledgeable than he or she really is. This behavior falls within the domain of managing poor impressions because playing dumb is not a subtle attempt to look good in some ego-involving sense, nor does it involve looking bad to one target in order to look good to another target. Instead, playing dumb appears to be an effort to adapt to frustrating or demeaning social constraints resulting from,

for example, involvement in an authoritarian relationship or an extremely competitive environment (Gove et al., 1980).

Gove and colleagues (1980) conducted phone interviews with 2,247 respondents from 48 states, asking them whether they had ever pretended to be less intelligent or knowledgeable than they were and, if they had done so, how frequently they had engaged in this behavior. Respondents were also asked about the targets of the behavior. Overall, 25 percent of the respondents reported playing dumb on occasion. Further, 17.0 percent of working men reported playing dumb with their co-workers and 14.9 percent reported playing dumb with their bosses. Working women were less likely than men to report this behavior at work: 9.4 percent reported playing dumb with their co-workers and 7.2 percent reported playing dumb with their bosses.

Kowalski and Leary's (1990) research involved a laboratory simulation using undergraduate psychology students as subjects. Therefore, whether their findings generalize to employees in organizations is an open question. Gove and colleagues' (1980) work was limited in that they examined only one method of managing poor impressions, playing dumb. Nevertheless, these two studies suggest that some employees, at some times, intentionally look bad at work. Thus,

Hypothesis 1: The management of poor impressions occurs in organizations.

Managing Poor Impressions Versus Managing Favorable Impressions

It could be argued that many attempts to look bad are simply veiled attempts to look good. For example, there is evidence that people use humility and modesty to ingratiate themselves to others (e.g., Baumeister & Jones, 1978; Langston & Cantor, 1989; Schlenker & Leary, 1982; Stires & Jones, 1969). By our definition, such cases do not represent the management of poor impressions because, as Giacalone and Rosenfeld (1986) pointed out, the purpose of these forms of self-depreciation is to mask the desire to look good. Hence, modesty and humility are subtle tactics for managing favorable, not unfavorable, impressions.

According to Leary and Kowalski (1990), impression management is a function of five factors: self-concept (the way a person views himself or herself), desired identity image (how the person would like to view him- or herself), role constraints (expectations associated with social roles), targets' values (the preferences of significant others), and current or potential social image (how the person is currently regarded or would like to be regarded by others). To the extent these antecedents are stable over time, people should develop a fairly characteristic set of presentational strategies, or strategies for managing impressions. To avoid inconsistencies in self-concept or social identity, a given individual's set of presentational strategies should be more or less homogenous. Because the strategies for looking bad probably differ markedly from those for looking good, people who frequently manage both favorable impressions and poor impressions would be in danger of being

seen by themselves and others as inconsistent. Hence, the tendency to manage poor impressions should be negatively related to the tendency to manage favorable impressions.

However, antecedents to impression management are not immutable: people's role constraints and the targets of their self-presentation strategies may change from time to time, and they may occasionally redefine their self-concepts or social identities. Further, there is evidence that people alter their impression management tactics to meet different goals (Fandt & Ferris, 1990; Furnham & Henderson, 1982; Gardner & Martinko, 1988; Hartung, 1988). Therefore, although managing poor impressions and favorable impressions should be inversely related, the magnitude of this relationship is unlikely to be strong. Thus,

Hypothesis 2: The tendency to manage poor impressions is moderately and inversely related to the tendency to manage favorable impressions.

Managing Poor Impressions Versus Self-Handicapping

Self-handicapping has been of considerable interest to social psychologists in the last several years (Luginbuhl & Palmer, 1991; Schill, Beyler, & Wehr, 1991; Shepperd & Arkin, 1989; Tice & Baumeister, 1990; Weary & Williams, 1990; see Higgins, Snyder, & Berglas [1990] for a review). Self-handicapping involves any behavior or choice of performance setting that enhances an individual's opportunity to excuse failure and accept credit for success (Berglas & Jones, 1978). An example is a golfer's claiming to have a bad back. If the golfer slices the ball into the woods, he or she can blame the poor shot on the injury. If the golfer makes a hole-in-one, however, his or her image is enhanced by having made a great shot despite the injury.

Because self-handicapping is a form of impression management that may involve the handicapper's looking bad (Kolditz & Arkin, 1982; Luginbuhl & Palmer, 1991), this construct may appear to be very similar to managing poor impressions. However, it is important to note that self-handicappers attempt to look bad in one sense only in order to look good in a wider, more ego-involving sense (Higgins et al., 1990). Hence, as with modesty and humility, self-handicapping is ultimately a tactic for managing favorable impressions. The management of poor impressions, on the other hand, does not involve looking bad in one way in order to look good in another way. Also, self-handicapping is an attempt to avoid responsibility for failure, but intentionally looking bad may involve seeking responsibility for failure.

Because the management of poor impressions and self-handicapping are both types of impression management involving an individual's performing suboptimally, they are probably positively related. However, because of the differences in the constructs outlined above, the magnitude of this relationship should be only moderate. Therefore,

Hypothesis 3: The tendency to manage poor impressions is moderately and positively related to the tendency to engage in self-handicapping.

Methods and Motives for Managing Poor Impressions in Organizations

Because this was the first study of the specific methods and motives for managing poor impressions in organizations, our investigation of methods and motives was largely exploratory. Still, some insights into the nature of methods and motives for managing poor impressions can be gleaned from prior theory and research.

Regarding methods of intentionally looking bad, evidence indicates that people may intentionally use certain forms of self-depreciation, such as playing dumb (e.g., Gove et al., 1980) and attempting to appear incompetent (Kowalski & Leary, 1990), to look bad at work. Also, Twaddle (1979) suggested that broadcasting actual or feigned physical limitations associated with illness or injury can be used as a form of self-presentation. To the extent that the ultimate intent of broadcasting limitations is to look bad, it would constitute a form of managing poor impressions rather than self-handicapping. In addition, acting in ways contrary to social norms is a documented strategy for looking bad (Braginsky et al., 1969; Leary & Miller, 1986). Hence,

Hypothesis 4: Methods of managing poor impressions in organizations include forms of self-depreciation, such as playing dumb and appearing incompetent; broadcasting limitations; and behaving in ways contrary to social norms, such as acting irrationally or aggressively.

With respect to motives for intentionally looking bad, avoidance of aversive outcomes seems to be a prevalent goal. For instance, people may try to appear incompetent to avoid stressful events or unpleasant tasks (Braginsky et al., 1980; Kowalski & Leary, 1990; Leary & Miller, 1986). An example in the workplace would be an employee's decreasing his or her performance to reduce the stress associated with a heavy workload. Obtaining valued outcomes is another likely motive. For example, psychiatric researchers have suggested that the offensive behavior of some mental patients may be largely a product of positive reinforcement (Carson, 1969; Schlenker, 1980), and Leary and Miller (1990) asserted that the desire to achieve certain outcomes sometimes leads people to project images of themselves that include undesirable characteristics. An example in organizations would be an employee's displaying a bad attitude in an attempt to get a raise. Thus,

Hypothesis 5: Motives for managing poor impressions in organizations include avoiding unpleasant tasks or events and attempting to obtain valued outcomes.

To investigate the phenomenon of intentionally looking bad at work, we conducted two studies. The first, a pilot study, involved a small group of

undergraduates and was carried out in order to develop categories for classifying methods and motives for the management of poor impressions. The second, primary study involved a larger number of people and was completed to cross-validate the categories identified in the pilot, improve their reliability, and test the hypotheses.

PILOT STUDY

Methods

Respondents. Thirty-six upper division students in an introductory course on human resource management taught at the main campus of a large northwestern university were invited to participate in the pilot study. Students were offered the options of either participating in the study or completing a short paper, with both assignments worth equal course credit. Of the 36 students, 28 elected to participate in the study; 43 percent of these were women. The average age of the respondents was 21.4 years.

Procedures. To generate cases of intentionally looking bad in organizations, we asked the respondents to provide a written answer to an open-ended question regarding the management of poor impressions. The instructions provided an example of a situation in which an employee appeared to display a bad attitude in an attempt to receive a pay raise. Respondents were then asked

Can you think of any real-life examples when someone (yourself or someone else) intentionally made him- or herself look bad at work (that is, stupid, greedy, or in some way ineffective)? In the space below, describe, if you can, a very specific situation where someone tried to look bad on purpose. Be sure to (1) explain the situation clearly, and (2) describe why the person tried to look bad.

Oral instructions to the students emphasized that course credit would be given even to those respondents who had never seen such behavior or who could not recall instances of seeing someone intentionally look bad at work. This was done to minimize the likelihood that respondents would make up examples simply to get credit. Completed responses were turned in one week from the day the instructions were handed out.

Results

Content analysis (Babbie, 1989; Holsti, 1969) was used to classify cases. In creating categories of methods, the first author carefully read the students' cases and then sorted them into classes that, in his judgment, contained similar methods. In labeling these classes, the first author considered the methods reflected in Hypothesis 4 and the specific nature of the cases within each class. Through this process, five categories of methods for intentionally looking bad at work were developed. The following are the categories and their definitions. (1) *Decrease performance: Employees restrict productivity,*

make more mistakes than formerly, do poorer-quality work, or neglect tasks. (2) Not work to potential: Employees feign ignorance of job knowledge or restrict the quantity or quality of their work. This category differs from "decrease performance" because the latter implies an employee previously worked at a higher level. (3) Withdraw: Employees engage in tardiness, faked illness, or unauthorized or long breaks. (4) Display a bad attitude: Employees complain, act angry, upset, strange, or weird, are hard to get along with or insubordinate. (5) Broadcast limitations: Employees let others know (verbally or nonverbally) of physical problems, errors, mistakes, or other personal limitations curtailing effective performance.

To create categories of motives, the first author read the cases once again and sorted them into classes containing similar motives. In labeling these classes, the motives reflected in Hypothesis 5 and the specific nature of the cases within each class were considered. Four classes of motives for intentionally looking bad at work were developed: (1) Avoidance: Employee seeks to avoid additional work, stress, burnout, or an unwanted transfer or promotion. (2) Obtain concrete rewards: Employee seeks to obtain a pay raise or a desired transfer, promotion, or demotion. (3) Exit: Employee seeks to get laid off, fired, or suspended, and perhaps also to collect unemployment or workers' compensation. (4) Power: Employee seeks to control, manipulate, or intimidate others, get revenge, or make someone else look bad.

Using these definitions and guidelines, two graduate students working on dissertations in the field of organizational behavior classified each case into the categories of methods and motives. The guidelines indicated that some cases might reflect multiple methods, multiple motives, or both. To assess interrater agreement, we used the Tinsley and Weiss (1975) index recommended by Schmitt and Klimoski (1991). The formula for this index is as follows: $T = (N_1 - NP)/(N - NP)$, where N_1 is the number of agreements between raters, N is the number of cases rated, and P is the probability that raters would agree by chance. Table 1 shows results for interrater agreement and the proportion of the cases classified into each category of method and motive.

PRIMARY STUDY: METHODS

Respondents

One hundred sixty-four business students in four classes conducted at two branch campuses of the same university used in the pilot study were invited to participate in the primary study. Students from branch campuses were used because, in this university, these individuals tended to be older and have more job experience than students at the main campus. Hence, we believed the branch campus students would better represent employees than the undergraduates from the main campus.

Of the 164 students, 162 voluntarily participated in the study and received extra credit for their involvement. Measures were made at two separate times; 145 students participated at both measurement times, and 17

TABLE 1
Interrater Agreement and Classifications into Categories^a

Categories	Pilot Study		Primary Study	
	Agreement	Percentage	Agreement	Percentage
Methods				
Decrease individual performance	.94	43.8	.90	48.8
Not work to potential	.78	20.8	.97	32.2
Withdraw	1.00	25.0	.94	10.0
Display bad attitude	.72	39.8	.91	10.0
Broadcast limitations	.78	15.4	.91	4.4
Overall agreement	.88		.93	
Motives				
Avoidance	.83	31.3	.84	60.4
Concrete rewards	.89	41.7	.88	13.2
Exit	.94	27.1	.99	11.0
Power	.72	27.1	.93	9.9
Overall agreement	.88		.91	

^a For the pilot study, N = 28; for the primary study, N = 162. We used the Tinsley and Weiss (1975) index as the indicator of rater agreement. The proportion of cases classified into the categories does not sum to 100 percent because some cases fit multiple categories and a few did not fit any.

participated at time 1 only. Over three-quarters (78.4%) of the respondents were currently employed, and all had been employed at some point during the past five years. Roughly half (50.3%) of the respondents had held management positions. Women made up 56.2 percent of the respondents, and 90.7 percent of the respondents were white. The average respondent was 30.25 years old, had been a full-time employee for 33.4 months (2.78 years) over the last five years, and had been at his or her current job for the past 41.9 months (3.49 years). These individuals represented a variety of occupations and included electrical engineers, accounting clerks, paralegals, technicians, dock workers, office supervisors, secretaries, insurance agents, food servers, accountants, sales managers, general office workers, opticians, and finance officers.

Procedures

Instructions to respondents. Surveys were sent to the instructors of the four courses, who then distributed the materials to their students. As in the pilot study, we asked the students to respond to an open-ended question regarding their observations of the management of poor impressions. However, drawing on the results of the pilot study, we refined the instructions by providing what we believed to be a more typical example of managing poor impressions than was provided previously:

Mary has been working very hard on her job. In fact, it seems that the harder she works the more work she is asked to do. After several years of this, Mary feels very stressed and "burned out." So, in order to reduce her workload and the accompanying

stress, Mary attempts to lower her boss's opinion of her by decreasing her performance. This way, Mary believes, she won't be asked to do so much work.

The rest of the instructions were identical to those given in the pilot, except that we told respondents, "If you cannot think of any such situation, please skip to Section 2." The remainder of the survey asked questions about the case reported in the first section, the frequency with which the respondent had seen himself or herself and others try to make themselves look bad, and demographic characteristics. Respondents were given one week to complete the survey outside of class. Students turned in their questionnaires to their instructors, who then sent them to us via campus mail.

Instructions to raters. Two graduate students, different from those in the pilot study, working on their dissertations in the field of organizational behavior served as raters in the primary study. In an attempt to improve interrater agreement, we slightly altered the definitions of two of the methods, providing raters with these definitions:

Withdraw—Engage in absence, tardiness, faked illness, or unauthorized or long breaks (including socializing with co-workers or others).

Broadcast limitations—Intentionally let others know (verbally or nonverbally) of physical problems, errors, mistakes, or other personal limitations to effective performance. Note that this does not typically include a change in actual performance.

We also provided the following slightly revised definitions of two of the motives:

Avoidance—Avoid additional or unwanted work, responsibilities, stress, burnout, or an unwanted transfer or promotion. This may also include avoiding working with a given person or group.

Obtain concrete awards—Obtain a pay raise, desired transfer, promotion, demotion, or some other tangible positive outcome.

Finally, we provided raters with these additional guidelines:

1. If there is not a clear indication of an intentional drop in performance, the case should be coded as "do not work to potential."
2. Feigning ignorance (e.g., playing dumb) is a form of not working to potential (unless there is a clear drop in performance, in which case it is decreasing individual performance).
3. If someone could have performed an activity, task, or responsibility but would not, this is a form of not working to potential (unless there is a clear drop in performance).
4. Broadcasting limitations implies (a) actual rather than feigned limitations, and (b) assertively making these limitations known. Note that this behavior is proactive rather than merely reactive.

Time periods. Salancik and Pfeffer (1977) suggested that researchers conducting surveys can decrease response bias, such as consistency effects,

by temporally separating the measurement of key variables. To reduce concerns about response bias in our study, we assessed the respondents' tendency to engage in impression management and self-handicapping in a second survey administered one month following the completion and return of the first survey. The same procedures of administration and survey return were used at time 2 as had been used at time 1.

Classification of methods and motives. To quantify the classification of cases, we created dummy-coded variables for each category. For a given method or motive, a value of 0 represented cases that were not classified into the category and a value of 1 represented cases that were so classified. For a case to be classified into a category of method or motive, both raters had to agree that the case belonged in that category.

Time 1 Measures

Frequency of managing poor impressions. The frequency with which respondents managed poor impressions at work was assessed by two items (1) "About how often have you yourself tried to make yourself look worse than you are at work?" (five-point scale, never to very often). And (2) "About how many times in the last five years have you yourself tried to make yourself look worse than you are at work?" (six-point scale, from 0 to more than 20). We computed scale scores by summing responses on the two items ($\alpha = .93$).

The frequency with which respondents had seen other people manage poor impressions was measured by the same items and response format, with "other people" and appropriate referents replacing "you" and its referents. We again computed scale scores by summing responses on the two items ($\alpha = .85$).

Actor and target. To determine the actor in the cases the respondents provided, we asked: "In the situation you just described, who was trying to make himself or herself look bad?" Response categories were (1) "you," (2) "another person you worked with," and (3) "other." A "not applicable" option was provided for respondents who had never seen or could not remember seeing anyone intentionally look bad at work. To determine the target of the management of poor impressions, we asked: "In the situation you described, who was the person trying to look bad to?" Response categories were: (1) "his/her immediate boss," (2) "management in general," (3) "co-workers," (4) "subordinates," and (5) "other." A "not applicable" option was also provided for this question.

Demographic variables. The last section asked respondents to supply information about their employment status, length of employment, job title, gender, year of birth, and ethnic group.

Time 2 Measures

Impression management. To assess individuals' tendency to manage favorable impressions, we used the 20-item scale developed by Paulhus in his Balanced Inventory of Desirable Responding (Paulhus, 1984, 1988). Ex-

amples of items are (1) "I sometimes tell lies if I have to" (reverse-coded), (2) "When I hear people talking privately, I avoid listening," and (3) "I have taken sick-leave from work or school even though I wasn't really sick" (reverse-coded). Responses are given on a scale from 1, "not true," to 7, "very true."

We preferred Paulhus's measure to others because we were interested in the relationship between managing poor impressions and a person's general tendency to manage favorable impressions; other measures of managing favorable impressions, such as the scales developed by Kipnis, Schmidt, and Wilkinson (1980) and by Yukl and Falbe (1990), assess very specific influence tactics. In addition, the factor structure of the Kipnis and colleagues scales has not held up well in later samples (Schriesheim & Hinkin, 1990), and the alpha coefficients for both the Kipnis and colleagues and Yukl and Falbe scales cluster in the .65 to .75 range. In contrast, the Paulhus scale appears to have a stable factor structure, alphas have ranged from .75 to .86, and there is evidence of convergent and discriminant validity for the measure (Paulhus, 1991).

To assess the dimensionality of impression management for our data, we used principal axis factoring with squared multiple correlations as communality estimates to fit the common factor model to the data. On the basis of the differences between eigenvalues and an examination of the scree plot, one factor was selected. We computed scale scores for impression management by summing responses on all 20 items ($\alpha = .84$). Complete information on scale development is available upon request.

Self-handicapping. To assess the tendency to engage in self-handicapping, we used a revised version of Jones and Rhodewalt's (1982) 25-item Self-Handicapping Scale. Examples of items are (1) "I suppose I feel 'under the weather' more often than most people," (2) "I would do much better if I did not let my emotions get in the way," and (3) "I often think I have more than my share of bad luck in sports, card games, and other measures of talent." Responses were given on a scale ranging from 0, "disagree very much," to 5, "agree very much." Rhodewalt (1990) reported acceptable internal consistency for this scale, obtaining a Cronbach's alpha for a sample of 503 individuals of .79; he also reported acceptable stability, obtaining a test-retest reliability for a sample of 90 individuals over a one-month period of .74. However, Rhodewalt also noted some evidence that the measure is multidimensional and that several items may be poor indicators of the underlying constructs. Other evidence for the validity of this measure is provided in Strube (1985) and Rhodewalt.

We followed the same statistical procedure as for impression management to assess the dimensionality of self-handicapping. Because of problems of interpretability and internal consistency, we dropped one factor whose composite scale had an alpha of .58. Seven items loaded on the other factor, which was interpretable as a tendency to engage in self-handicapping. Therefore, we computed scale scores for self-handicapping by summing

across these seven items. Coefficient alpha for our data was .74. Complete information on scale development is available upon request.

PRIMARY STUDY: RESULTS

Table 2 contains the descriptive statistics for all the measures. Results of the qualitative analyses and tests of hypotheses are detailed below.

Cases

Of our 162 participants, 91 (56.2%) reported incidents in which they or someone else managed poor impressions. The Appendix provides excerpts of cases illustrating each category of method and motive. Reading the cases indicates that both impression construction and impression motivation are multifaceted. In many instances, a given case includes several strategies for managing poor impressions and a variety of reasons for doing so. Together, these cases constitute evidence that the management of poor impressions occurs in the workplace and is a discriminable, legitimate phenomenon.

Table 1 gives the percentages of cases classified into each category of method and motive and interrater agreement for each category for both the pilot and the primary study. Values of the Tinsley and Weiss (1975) index of agreement for several of the categories are considerably larger in the primary study than in the pilot. For example, agreement for the category "not work to potential" is .97 for the primary study and .78 for the pilot. As Table 1 shows, overall agreement for the classification of both methods and motives appears to be somewhat improved. We attribute the increase in agreement largely to refinement in the definitions of the categories and the expanded guidelines for classification.

Tests of Hypotheses

To test Hypothesis 1, we first examined whether the mean frequency with which respondents had themselves managed poor impressions was greater than 1.0, a value indicating that a respondent had never tried to make himself or herself look bad at work. We found that the mean frequency ($\bar{x} = 1.49$) was indeed greater than 1.0 ($t = 9.09, p < .01$). Next, we examined results for observations of others; this mean frequency was also greater than 1.0 ($\bar{x} = 2.58, t = 17.68, p < .01$). These findings support Hypothesis 1.

As Table 2 shows, scores on the impression management scale were moderately, inversely related to the frequency with which respondents engaged in managing poor impressions ($r = -.31, p < .05$). This finding supports Hypothesis 2. In addition, as Table 2 shows, the frequency with which respondents themselves intentionally looked bad at work was moderately and positively related to self-handicapping ($r = .30, p < .05$), supporting Hypothesis 3.

The simple correlations reported in the last paragraph represent the relationships among the relevant variables (managing poor impression, man-

TABLE 2
Descriptive Statistics and Correlations^a

Variables	N	Means	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Demographic variables																			
1. Tenure	158	33.40	22.01																
2. Management experience	161	.50	.50	-.26*															
3. Gender	162	.44	.50	.06	-.06														
4. Age	162	30.25	7.69	.25*	-.28*	-.10													
Frequencies																			
5. Looking bad, self	159	1.49	.98	-.08	.12	.20*	-.19*												
6. Looking bad, others	157	2.58	1.12	.14	-.01	.06	.03	.39*											
Correlates																			
7. Impression management	145	3.95	0.94	-.04	-.06	-.23*	.31*	-.31*	-.14										
8. Self-handicapping	145	2.24	0.74	-.16	.24*	.12	-.25*	.30*	.14	-.35*									
Methods																			
9. Decreasing performance	91	.04	.03	.07	-.24*	.08	.19	-.12	.02										
10. Withdrawal	91	-.06	.03	.03	.09	-.09	-.09	-.01	.06	-.18									
11. Not working to potential	91	-.03	.00	-.08	.08	.08	-.11	.10	-.01	-.67*	-.23*								
12. Displaying a bad attitude ^b	91	.02	.03	-.04	.01	.13	.07	.06	.01	-.10	.14	-.15							
13. Broadcasting limitations	91	-.09	-.01	-.11	-.08	-.11	-.11	.14	.01	-.21*	-.07	-.16	-.07						
Motives																			
14. Avoidance	91	.19	-.03	.14	.02	.13	.11	-.08	.10	-.18	-.04	.21*	-.18	-.05					
15. Concrete rewards	91	-.16	.18	.19	-.09	.07	.10	.14	.07	.01	-.13	.01	.09	.07	-.36*				
16. Exit	91	-.11	-.09	-.14	-.11	-.07	-.15	.09	-.11	.12	-.14	-.16	.26*	-.07	-.43*	-.14			
17. Power	91	-.07	.06	-.04	-.17	-.04	.18	-.08	.03	.19	.01	-.16	-.11	-.07	-.33*	.06	-.12		

^a Data sets ranged from 70 to 169 observations with an average of 102. Management experience was dummy-coded, with 0 = no management experience and 1 = management experience. Gender was also dummy-coded, with woman = 0 and man = 1.

* p < .05

aging favorable impressions, and self-handicapping) when demographic variables are uncontrolled. If these relationships can be explained simply by demographic variables, support for Hypotheses 2 and 3 would be less convincing. To provide a more conservative test of the hypotheses, we conducted two additional sets of analyses. The dependent variable in both was the frequency with which respondents themselves engaged in intentionally looking bad. The first analysis was a hierarchical regression equation with the set of demographic variables entered at the first step and the variables of interest, impression management and self-handicapping, entered at step 2. The purpose of this analysis was to examine the magnitude of the increment in R^2 associated with impression management and self-handicapping as a set. The second analysis was a simultaneous regression equation into which all variables were entered at the same time. The purpose here was to determine whether or not both impression management and self-handicapping accounted for unique variance.

Table 3 shows results. As can be seen, impression management scores and self-handicapping together account for about 8 percent of the variance in the frequency with which respondents intentionally looked bad at work, over and above variance explained by the demographic variables. Further, as the table shows, impression management scores and self-handicapping were the only variables in the simultaneous regression to explain a significant amount of unique variance.

TABLE 3
Results of Regression Analyses of Demographic Variables, Impression Management, and Self-Handicapping

Variables	R ²	ΔR ²	F	β	t
Hierarchical regression					
Demographic variables	.142		1.95*		
Impression management and self-handicapping	.219	.077	5.97*		
Simultaneous regression					
Employment status 1				-.10	-0.75
Employment status 2				.12	0.99
Employment status 3				.20	1.46
Ethnic group 1				-.34	-0.80
Ethnic group 2				-.22	-0.71
Ethnic group 3				.68	1.19
Ethnic group 4				-.26	-1.32
Ethnic group 5				.40	1.05
Management experience				.11	0.93
Gender				.13	1.12
Tenure				.01	0.91
Age				-.01	-0.80
Impression management				-.15	-2.17*
Self-handicapping				.17	2.03*

* p < .05

The categories of methods based on Hypothesis 4 and developed in the pilot study proved to be useful for classifying cases in the primary study. Methods for looking bad at work included decreasing performance (looking less competent by restricting productivity, making mistakes, or neglecting tasks) and not working to potential (including feigning ignorance). Both methods involve forms of self-depreciation. Other methods included displaying a bad attitude and withdrawal. Both of these methods, we suggest, involve behaving in ways contrary to social norms. Finally, some employees broadcast limitations by assertively informing others of physical problems and work-related errors. As Table 1 shows, the raters classified cases into each method category very reliably. These findings tend to support Hypothesis 4.

Categories of motives based on Hypothesis 5 and developed in the pilot also proved to be useful for classifying cases in the primary study. Avoidance of additional work or stress was a common motive for managing poor impressions, as was attempting to obtain such valued outcomes as concrete rewards, organizational exit, and power over others. As Table 1 shows, the raters also classified cases into each category of motive very reliably. These results tend to support Hypothesis 5.

Ancillary Analyses

Test for instructor effect. To examine whether an instructor effect accounted for variance in the management of poor impressions, we created three effects-coded variables to represent the four course instructors who had administered the survey. The frequency of reports of individuals' intentionally looking bad was then regressed on these variables. The effects-coded variables did not explain variance in the frequency with which respondents intentionally made themselves look bad ($R^2 = .01$, $F = 0.69$, n.s.), nor did these variables account for significant variance in the frequency with which respondents observed others managing poor impressions ($R^2 = .02$, $F = 1.22$, n.s.).

Actors and targets. With respect to the actor in the cases, 22 percent of the respondents who provided cases described a scenario in which they themselves had intentionally looked bad, and 74.6 percent described scenarios in which someone else managed poor impressions. The remaining 3.4 percent of the respondents described complex cases involving themselves and others purposefully managing poor impressions. Regarding the target of the impression management, 57.1 percent of the respondents who supplied cases described scenarios in which their immediate bosses were the foci of the behaviors. In 35.2 percent of the cases, management in general was the target, and in 14.3 percent of the cases co-workers were the targets. In 2.2 percent of the cases, a supervisor was described as trying to look bad to a subordinate. These numbers total more than 100 percent because some of the cases involved multiple targets.

Impression management and actors. To examine the relationship between the actor in the cases and the management of favorable impressions,

we created a dummy-coded variable in which a value of 0 represented cases in which the respondents reported themselves as the actor and a value of 1 represented cases in which respondents reported someone else as the actor. The correlation of this variable with the management of favorable impressions was significant ($r = .32$, $p < .01$). Thus, respondents who reported cases of themselves managing poor impressions tended to score lower on the measure of impression management than respondents who reported instances of someone besides themselves managing poor impressions.

DISCUSSION

The central finding of our study is verification that people do sometimes intentionally look bad at work. In the current investigation, the most common target of the management of poor impressions was an immediate supervisor. However, employees sometimes attempted to look bad to their peers and, on occasion, supervisors intentionally looked bad to their subordinates. Another important finding is that intentionally looking bad is empirically discriminable from related concepts: roughly 90 percent of the variance in the management of poor impressions was not shared with the management of favorable impressions or self-handicapping. This finding supports our definition of intentionally looking bad and our contention that managing poor impressions differs from concepts such as humility, modesty, and self-handicapping.

Our research contributes to the broad literature on impression management in at least two ways. First, our finding that impression management can involve intentionally looking bad calls into question Zerbe and Paulhus's (1987) suggestion that impression management is a subset of socially desirable responding. We suggest that it is more reasonable to consider impression management as a separate phenomenon, one that only sometimes involves socially desirable responding. Second, by investigating methods and motives for intentionally looking bad, the study adds to our understanding of impression construction and impression motivation. The methods people use to intentionally look bad found in this study are quite different from the influence tactics they use to look good (cf. Kipnis et al., 1980; Yukl & Falbe, 1990). In addition, motives for managing poor impressions seem to differ from those for managing favorable impressions. For instance, in discussing the reasons people attempt to look good, Leary and Kowalski (1990) described certain social and material outcomes, self-esteem maintenance, and the development of personal identity, motives quite different from those found in our study.

This investigation also moves beyond earlier research on playing dumb and self-depreciation (Dean et al., 1975; Gove et al., 1980; Kowalski & Leary, 1990) by unearthing a wide variety of methods of intentionally looking bad, identifying specific motives for managing poor impressions, and providing evidence that the phenomenon occurs in real work settings. A related contribution is the finding that certain combinations of methods and motives are

more likely to occur than others. Not working to potential in order to look bad tends to be motivated by the desire to avoid additional work. Displaying a "bad attitude" in order to look bad tends to be motivated by a desire to leave an organization.

The taxonomy of methods and motives developed in this study is unlikely to be universal. There may be other methods and motives for managing poor impressions, and some of our categories may not be found in all organizations. Still, cases from the primary study were very reliably placed into the categories developed in the pilot. Further, if the taxonomy was not generalizable, there should have been many instances in which either (1) cases in the primary study could not be placed in the taxonomy and required other categories or (2) categories in the taxonomy were not needed to place cases. In fact, nearly all the cases from the primary study could be placed in the taxonomy and all the categories in the taxonomy were used, suggesting the taxonomy may be to some extent generalizable.

The management of poor impressions does not appear to occur with great frequency but appears to be common enough to warrant further investigation. Over half of our respondents reported witnessing a case of someone intentionally looking bad at work. In addition, although respondents suggested that they themselves seldom engaged in such behavior, they typically reported observing others intentionally looking bad "occasionally." Evidence also suggested that respondents who did not discuss cases of themselves managing poor impressions may have been attempting to manage favorable impressions—with us the researchers presumably as targets. A related finding was that the majority of respondents preferred to provide cases of people other than themselves managing poor impressions. These results suggest that our self-report data may have underestimated the actual frequency of intentionally looking bad. In fact, relatively high levels of managing poor impressions may be symptomatic of dysfunctional organizational cultures. Thus, investigation of within-organization and between-organizations variation in employees' intentionally looking bad is a potentially fruitful topic for future research.

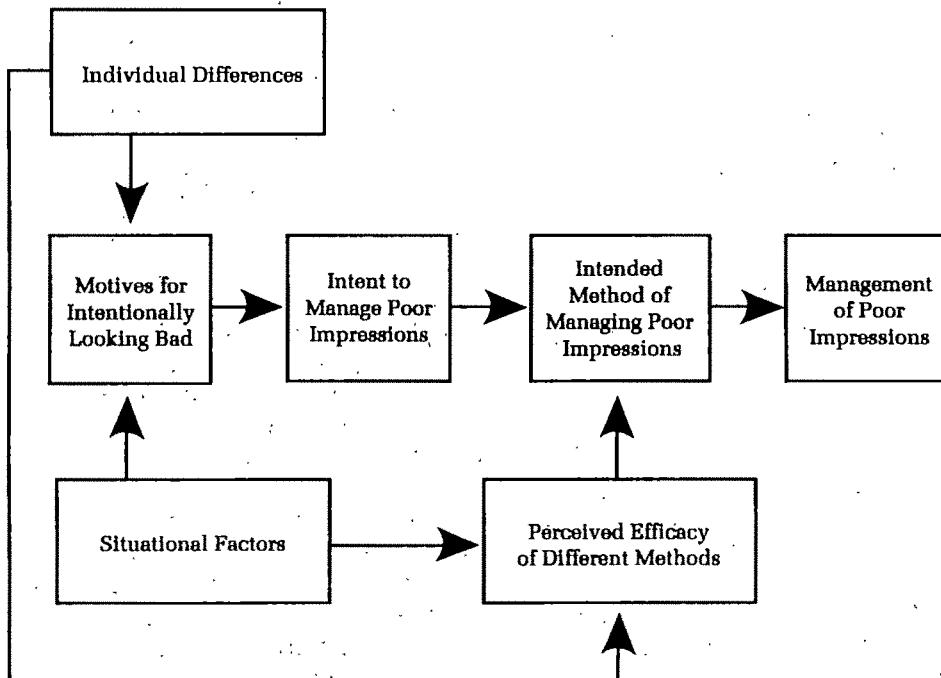
Even in organizations in which the management of poor impressions has a low base rate, intentionally looking bad may have important consequences. Most of the methods and motives for intentionally looking bad identified in this study involve actions that are typically disadvantageous to organizations. In addition, the management of poor impressions appears to promote inaccurate perceptions among organization members. This inaccuracy could itself produce negative outcomes by leading organizational decision makers to misinterpret employee behavior. A review of the cases described in the Appendix indicates that outcomes of managing poor impressions can include inequitable treatment of employees, increased health care costs, decreased customer satisfaction, and decreased individual and organizational effectiveness resulting from lower productivity. Whenever such outcomes occur, the financial and social costs are unlikely to be trivial.

Future work should determine more precisely the nature and severity of the consequences of employees' intentionally looking bad at work.

To guide future research toward a deeper understanding of the management of poor impressions, we offer the tentative framework illustrated in Figure 1. In this model, people's motives for intentionally looking bad are a function of individual differences and situational factors. Possibly relevant individual differences are the need for achievement and self-esteem. We suspect that individuals with a high need for achievement will be less likely to engage in the management of poor impressions because this behavior would not generally be expected to result in long-term career advancement. We also suspect that employees with chronically low self-esteem will be more likely to manage poor impressions because looking bad to others is consistent with their own negative self-perceptions.

Examples of potentially relevant situational factors are task characteristics and leader attributes. Jobs with low autonomy, insufficient feedback, and uninteresting duties probably set the stage for the development of such motives as the avoidance of unpleasant work and organizational exit. Supportive leaders who consider the needs of subordinates may be able to reduce employees' potential to be motivated by concerns such as organizational exit and revenge (power). Leaders who supply reasonable goals and

FIGURE 1
Model of the Management of Poor Impressions



direction to their subordinates may reduce the work-related stress that underlies the avoidance motive. In our model, once motives for intentionally looking bad exist, the intention to engage in the management of poor impressions is antecedent to the intended method.

The perceived efficacy of the different methods is also a function of individual differences and situational factors. For instance, self-efficacy (a person's estimate of his or her ability to accomplish a certain task) would likely guide employees toward methods of looking bad that they expect they can successfully implement. Contextual determinants could include both the opportunity to use certain methods and organizational practices governing the consequences of poor performance and withdrawal behaviors. The perceived efficacy of the methods, along with the intent to manage poor impressions, determines which particular methods an individual uses. When an individual has chosen a method or methods, the management of poor impressions will take place. To illustrate the model more concretely, we offer the following example:

John is a unionized production worker whose job, while financially rewarding, involves performing repetitive, uninteresting tasks at a furious rate of speed. John has chronically low self-esteem and low need for achievement but is generally a good worker. John's new supervisor, in a desire to impress the employer, wants to increase the productivity of his unit. However, the supervisor is low on both initiating structure and consideration; the supervisor's strategy for increasing productivity is to identify the most capable, motivated employees and give them more work. The plant's contract with the union makes it difficult for management to terminate workers for low performance, but does allow for discharge due to tardiness, absenteeism, and other forms of withdrawal.

Our model suggests John is a candidate for the management of poor impressions. He has a clear reason for intentionally looking bad (to avoid additional work), and his personal attributes (low self-esteem and low need for achievement) and situation (an already hectic work pace, a boring job, and an ineffective supervisor) make it likely that John will be motivated to manage poor impressions. The methods John intends to use to look bad will depend on his estimate of his ability to successfully implement a given method and on situational factors. He cannot very well withdraw from the workplace (he could be fired for doing so), and displaying a bad attitude would not necessarily lead his supervisor to believe John is incapable or unmotivated. Also, because John is currently a good worker, he cannot use "not working to potential" as a tactic. However, he may be able to decrease his performance quickly enough that his new boss won't recognize his potential; at any rate, decreasing performance would demonstrate low motivation. Also, broadcasting limitations could be effective in making John appear less capable. Hence, decreasing performance and broadcasting limitations would likely have the highest perceived efficacy. Given both the intent to

manage poor impressions and several plausible methods for doing so, the model predicts John would attempt to manage poor impressions.

The bulk of our results do not appear to be attributable to study artifacts such as an instructor effect. Still, future research should investigate several issues we did not address. First, later work must explicate the determinants of the correlation between scores on the impression management measures and the frequency with which respondents reported intentionally looking bad. Our interpretation was that employees with a tendency to engage in the management of favorable impressions were less likely than others to engage in the management of poor impressions. This interpretation was consistent with the theoretical underpinnings of Hypothesis 2. However, it is possible that the measure of the frequency with which respondents managed poor impressions was itself affected by impression management. The interpretation here would be that less candid respondents reported lower frequencies of intentionally looking bad because managing poor impressions is not socially desirable. Because we attempted to make completion of the survey nonthreatening by stressing confidentiality and our lack of intent to evaluate respondents, we find this second interpretation less plausible than the first. Nevertheless, later work should examine this issue in greater depth.

Second, the proportion of cases classified into the categories of methods and motives varied between our two studies. In the pilot, our instructions included an example of intentionally looking bad involving someone demonstrating a bad attitude to obtain concrete rewards. In the primary study, we provided an example involving someone decreasing performance to avoid unwanted work. The proportion of respondent cases classified into the categories seemed to vary accordingly. In the pilot study, 39.6 percent of the cases involved someone demonstrating a bad attitude, and in the primary study 10 percent of the cases were thus classified. Also, in the pilot 31.3 percent of the cases involved the avoidance motive, but in the primary study 60.4 percent of the cases involved this motive. Because of the implications of these findings for the internal validity of our study, future work needs to determine whether these differences are the result of variations in the demographic characteristics and work experience of the respondent groups or a priming effect within our instructions. If it is the latter, the reason for the priming effect should be determined. Perhaps the example serves as a cue for the recall of specific events.

Finally, the current study did not focus on how observers cognitively evaluate and interpret the intentionality associated with the management of unfavorable impressions. The labeling of most behavior is a function of imputed intentionality, but this fact has thus far not received great attention in the literature on impression management within organizations. Future theoretical and empirical work on the management of both favorable and unfavorable impressions should follow the lead of Jones (1964), who discussed the role of inferred intention in the ingratiation process.

In conclusion, we hope that we have taken several meaningful first steps toward promoting a greater appreciation of a somewhat neglected phenom-

enon, the management of poor impressions in organizations. It is our belief that a heightened understanding of this behavior could enhance the effectiveness of individuals and organizations.

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APPENDIX

The following excerpts of cases are drawn from the primary study to illustrate each category of method and motive. We have highlighted the segments of the cases that indicate why the cases belong in the category being illustrated.

Methods

Decrease performance. The employee in question had been working a lot of overtime for the past month. . . . Shift supervisors were given discretionary limits on who was assigned to work holiday shifts. . . . Sign-ups were being taken for the next holiday. The employee/operator was assigned to the computer console work station for that shift rotation. That particular operator was usually very good at the console working station, making few if any mistakes. During the week prior to selection of who would work the holiday, the operator seemed to have a memory malfunction. Everything they did was wrong but nothing serious enough to bring any of the computers to a halt. The operator was not picked to work the holiday. After the holiday passed, the errors stopped.

Withdraw. A friend of mine in retail sales asked her boss to give her less hours a week because she did not want to work that many hours. Her boss refused, stating that there would not be enough coverage if she worked less. In retaliation, she would frequently skip work with or without calling in with an excuse . . . in an attempt to make her boss mad at her and cut her hours.

Not work to potential. In the Navy, an office is frequently charged with collateral duties above and beyond the regular more-than-full-time job. . . . I observed many examples of individuals who were careful not to display any special competencies in any areas that could remotely be related to these collateral duties. That way, if they were "awarded" the tasks, they could exceed expectations and make a show of how difficult their lot was—helping them avoid additional such jobs.

Display a bad attitude. The situation involves an employee who would give the appearance of not caring and not being a leader in a leadership position. This employee would also make comments about how much he did not like his work situation and how pointless (or unimportant) his activities were. He felt by not taking the leadership role he was assigned, he would be chastised and perhaps would lead to him being placed in another situation more to his liking.

Broadcast limitations. The only circumstance I have witnessed related to this topic are employees who come to work somewhat physically ill—though not extremely ill, and will act

more sick than they actually are so they can leave work early. I have done this myself on some occasions when I've been emotionally upset or a bit ill, and really didn't feel up to being at work.

Motives

Avoidance. This employee "plays dumb" when customers come to her asking for answers to questions or for her assistance. She does have the knowledge needed to effectively carry out the responsibility, but instead chooses to appear ineffective to discourage future requests/work. This behavior carries over to other responsibilities as well; i.e., output from her is delayed so that customers become frustrated and think twice before asking for future assistance, especially when a quick work turn around is required.

Concrete rewards. I try to look stressed out or bored in front of my boss. The reason being, if he feels I'm over worked, hopefully, I'll get a raise . . . I figure that since I now run the computer to ring up sales, something only two other people can do, I deserve a raise. . . . By hiring some other salesman he would have to pay at least another \$4 per hour more than my wage. I feel I should get some of his savings and when he doesn't think so, I figured I'm not going to bust my ass for him so I cut my performance level.

Exit. I worked with a girl in merchandise sales who tried to make herself look bad on purpose. She had been looking for another job and when she got hired at another place, she put in her two weeks notice at her current job. She was really anxious to start the new job and didn't want to work those last two weeks. . . . She wasn't pulling her work load and wasn't worried about getting in trouble. Actually, that's what she wanted—was to get dismissed before finishing the last two weeks so she could start her new job.

Power. A woman who holds a high level clerical position in the finance department of a large firm constantly complains that she "is just not financial" . . . She had a reputation for acting like she possesses inferior intelligence. I think this employee has several motivations for her actions at work. This particular employee knows how to manipulate her organization. In her environment, the squeaky wheel always gets the grease.

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MANAGING INTERNATIONAL INTERDEPENDENCE: CEO CHARACTERISTICS IN A RESOURCE-BASED FRAMEWORK

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This study's basic argument is that the level of a firm's international interdependence influences the pattern of CEO characteristics ideal for enabling a CEO to contribute to firm performance. In data from 74 CEOs and their firms, the influence of locus of control, information evaluation style, and international experience on firm performance varied with interdependence. A marketing management specialization hindered performance in a high international interdependence context and helped it in a low interdependence context. Furthermore, an overall pattern of CEO characteristics consistent with hypothesized theoretical profiles had an important influence on firm performance.

The mainstream strategic leadership literature suggests that the individuals having overall responsibility for firms—chief executive officers, top management teams, and governance boards—influence strategic choices that necessitate the use of specific organizational designs for optimal performance outcomes (see Hambrick [1989] for a critique of this research). Organization design issues are therefore, in this view, subordinate to strategic choices (Collis, 1991). This study applies an alternate perspective, a resource-based view of firms, to the strategic leadership—organizational outcomes relationship. Still in a developmental stage, the resource-based view is a conceptualization of firms as unique bundles of accumulated tangible and intangible resource stocks. Resource stocks are defined as internal attributes, including assets, capabilities, processes, routines, and knowledge, that are tied semipermanently to or controlled by a firm (Barney, 1991; Nelson & Winter, 1982; Wernerfelt, 1984). Resource stocks are considered firm-specific as they result from the historical development of a firm and are expected to have positive economic outcomes to the extent they are valuable, nonimitable, and nonsubstitutable (Barney, 1986, 1991; Dierickx & Cool, 1989).

A firm's CEO presumably influences the direction and rapidity of the process of accumulating resource stocks. However, inasmuch as strategic choices are imitable and constrained by current resource stocks, most changes in competitive advantage would occur in the long term because, if a resource is attractive and accessible to multiple firms, it is unlikely to yield a unique resource stock position. Furthermore, the accumulation process is

not immediate; proponents of the resource-based view assume an imperfect mobility, or stickiness, in the market for valuable factors of production (Petterson, 1993). As described by Dierickx and Cool (1989), resource stocks are accumulated through the path of "flows" over time and, although flows can be adjusted instantaneously, stocks cannot be. Rather, "it takes a consistent pattern of flows to accumulate a desired change in strategic asset stocks" (Dierickx & Cool, 1989: 1506). Finally, resource stocks are in effect "the state variables in the firm's dynamic optimization problem" and consequently, their trajectory depends on current resource levels (Collis, 1991: 51). Above-normal returns are suggested as more likely to be obtained when strategy reflects assets already in place, if these assets were undervalued when they were acquired (Barney, 1989). Thus, significant changes in competitive advantage likely occur in the long term and generally extend or are a function of firm history.

Reconsidering organization design issues, from a resource-based view accumulated stocks should influence task design independent of strategic choices. The implication of this view, as applied to understanding the influence of CEOs, is that the emphasis shifts from focusing on CEOs' strategic choices to the matching of CEO characteristics with the specific task demands created by the firm's stocks. The task requirements associated with managing accumulated resource stocks should give rise to the specific CEO characteristics that will allow an individual to contribute to firm performance. The immediate influence of strategic choices would be on asset flows.

In an extension of the resource-based view, an international firm may be conceptualized as independent resource stocks in multiple countries. However, according to international business theory, if resource accumulation is to occur within the context of shared ownership rather than within an efficient market context, the former must offer an advantage. Thus, I suggest that an international firm is not a multinational collection of independent resource stocks but rather, an interdependent resource stock that is dispersed geographically. The level of other assets within the firm influences incremental asset accumulation (Dierickx & Cool, 1989). Thus, resource stocks in different locations must be connected or integrated to some degree or level. For example, common routines may facilitate the sharing of innovation, collective learning, and the transfer of information and skills across locations (Collis, 1991: 52).

It is further argued that integration across locations is central to the advantage derived from geographically dispersed, international resource stocks. Regardless of the specific form or nature of the stocks, managing the associated international interdependence is a central task by which CEOs influence performance outcomes. Thus, in this study, managing international interdependence—defined as the degree to which the performance of functional activities is coordinated or integrated among units located in different countries—is posited as the principal task associated with extracting returns from the international accumulation of tangible and intangible

assets. Given that a CEO's ability to modify the resource stocks of a firm is constrained, the CEO's contribution to performance outcomes will depend on the nature of the CEO in relation to the level of international interdependence that must be managed. Specifically, the association between different CEO characteristics and firm performance is posited as being dependent on the level of a firm's international interdependence.

THEORY DEVELOPMENT

International Interdependence

International business theorists have maintained that international firms are by definition, composed of operations and resource stocks located in different nations. The presence of international resource stocks suggests controlling them centrally has a transactional advantage over the assets being controlled by separate managements (Caves, 1982). Markets and firms are alternate instruments for conducting transactions, and international transactions will be conducted within an organization only when market failures give firms an advantage in terms of efficiency (Williamson, 1975). A critical implication of this theory is the recognition that fundamental to the existence of international tangible and intangible asset accumulation is international interdependence within a firm. International resource stocks exist as an alternative to the market whose purpose is the execution of transactions. Activities within the firm must therefore be linked through those transactions. This necessity suggests that international interdependence must exist within a firm composed of international resource stocks as interdependence is fundamental to developing stocks in a manner that gives rise to competitive advantage over a solely domestic firm.

International interdependence is further explicated through current strategic explanations of international competition. International firms increasingly face multipoint competition (Knickerbocker, 1973; Prahalad & Doz, 1987) that requires them to respond as integrated wholes. Thus, in many industries, an international firm may no longer confine its strategy to a country-by-country response, with each foreign subsidiary reacting to industry conditions autonomously. Rather, actions throughout the organization become interdependent as competitive advantage is based on the collective organization's capabilities.

Thus, although I argued initially that international interdependence accompanies the existence of international resource stocks, I also expected that variance in the level or extent of firms' interdependence will occur. At one extreme, interdependence may be emphasized in only a few fundamental areas, such as capital flows and some information flows (performance reporting, technical exchanges, and the like). Subsidiaries would remain autonomous, with a little integration or coordination occurring across locations. As a consequence, an overall low level of international interdependence would exist. In contrast, a high level of interdependence will exist when integration occurs for multiple activities across multiple locations. For

example, as Ghoshal (1987) noted, enhanced organizational learning is a potential result of the diversity of a firm's international operations and its exposure to multiple environmental stimuli. However, such learning cannot be fully exploited as a competitive advantage if a firm is unable to transfer and synthesize the knowledge developed throughout its dispersed locations. Managing international interdependence can be considered, therefore, a principal task involved in managing and exploiting international resource stocks as integrating these assets provides the "incremental value of being multinational" (Kogut, 1989: 383-384).

Several studies provide empirical support for the central role of interdependence in managing international resource stocks. Kobrin argued that global integration suggests greater interdependence than coordination of like activities in that "it implies dependence of subsidiaries on the multinational system" (1991: 19). In his study, he found that intrafirm exchanges of product components and finished goods characterized high levels of global integration. Similarly, in their case analyses, Bartlett and Ghoshal (1989) distinguished firms on the basis of the patterns of their resource configurations and suggested that strong interdependencies are "automatic outcomes of the specialized and distributed configuration of assets and resources" (1989: 60). Cvar's (1984) case studies showed that a significant level of cross-border resource flows of semifinished and finished goods accompanied integrated worldwide competitive responses. Thus, operational exchanges, such as resource flows between subunits, apparently lead to increased interdependence within an organization as the activities of one subunit are controlled by or linked to the activities of another subunit or other subunits (Grant, 1988; Victor & Blackburn, 1987).

CEO Characteristics Needed for Managing International Interdependence

The management of interdependence has received considerable research attention. Previous studies have focused primarily on the structural control systems or integrative mechanisms used to manage interdependence (see Galbraith and Kazanjian [1986] for a summary). More recently, Michel and Hambrick (1992) examined the role of social cohesion and the corporate-wide operating knowledge base of a top management team in coping with interdependence. Gupta and Govindarajan (1986) examined the influence of general managers' organizational familiarity with managing intrafirm resource flows. However, studies have not considered the relevance of CEOs' characteristics to managing interdependence or examined international interdependence.

An information-processing model of organization design strategies suggests the specific characteristics that are likely important for managing interdependence. Information-processing theory suggests that when complexity arises from interdependence and coordination among subunits, mechanisms or design responses are necessary to create an integrated pattern of behavior (Egelhoff, 1991; Galbraith, 1973; Tushman & Nadler, 1978). Specifically, organizations need to develop design strategies to reduce their need to

process information or increase their capacity to do so, or to do both. Given that increased levels of international interdependence result in greater information-processing demands within an organization, increasing the capacity to process information is likely the more critical design strategy. The capacity to process information increases through formal, hierarchy-based design strategies and the creation of lateral relations (Galbraith, 1973). In international firms having competitive advantages based on extensive international integration, formal organizational responses are insufficient for responding to the associated information-processing complexity (Bartlett & Ghoshal, 1989; Egelhoff, 1991). Thus, this study focused on the use of lateral relations and processes as the dominant design strategy. Furthermore, I assumed that a firm's CEO plays a central role in the lateral relations design process because, as Egelhoff stated concerning the information-processing capacities of structure, "only at the CEO and executive-committee level does a cross-functional or general management perspective exist, and only at this level does the structure facilitate multifunctional information coming together" (1991: 354).

The design of lateral processes—the informal organization—is based on various integrative processes as well as on the integrative role of individual managers. Galbraith (1973: 54) detailed the "representational and climate" factors of effective lateral interactive processes, which in turn suggest the specific CEO characteristics that would facilitate the development of these factors. In particular, effective lateral processes are embedded in a climate in which confrontation is accepted but is channeled into positive outcomes such as team building and consensus. To do so necessitates managerial skills that facilitate interpersonal interactions and group decisions. Conflict resolution skills are also critical. A participatory climate is important as managers responsible for the implementation of across-unit decisions must be incorporated into the processes. Inasmuch as a single manager is unable to know all the decision factors, incorporating multiple managers helps ensure that relevant information, as complete as possible, and information from multiple sources are processed. A CEO's approach to the design of these lateral processes would largely be a function of his or her locus of control.

Galbraith (1973: 63) further asserted that effective lateral processes require "interpersonal competence" in which the feelings of participants as well as objective facts are incorporated into decision making. Thus, personal and emotional factors are incorporated into the processes. Although confrontation may be encouraged, problem solving in which consensus emerges through creative, integrative solutions is emphasized. Thus, the CEO's influence on these factors would be defined in part by the nature of his or her problem-solving style.

Information-processing theory also suggests background characteristics that facilitate the effectiveness of individual managers as integrators. Integrators should have a "wide range of contacts" within an organization, across both functional areas and business units (Galbraith, 1973: 94). They

should be able to recognize different perspectives within the organization and able to facilitate communication among different specializations. Knowledge of the specialties to be integrated and a demonstrated competence in the areas of greatest uncertainty or in those that define the interdependence are critical. These capabilities, as well as organizational familiarity and contacts, would largely be developed through the functional and international background characteristics of the CEO.

Although other dimensions may also be important, an information-processing theory approach to lateral relations design suggests a set of CEO characteristics that should critically influence the ability of an organization to process the additional information accompanying international interdependence. The specific characteristics suggested are (1) locus of control, (2) problem-solving style, (3) functional experience, (4) international responsibility, and (5) international experience. The following subsections develop the theoretical link of each characteristic to the management of international interdependence.

Locus of control. The locus of control dimension derives from Rotter's (1966) distinction between the internal and external control of reinforcement. The concept, which has been comprehensively discussed in previous strategy studies (cf. Govindarajan, 1988, 1989; Miller, Kets de Vries, & Toulouse, 1982; Miller & Toulouse, 1986), refers to individuals' perceptions about their control over events in life. A manager with an internal locus of control essentially sees outcomes as a result of personal initiatives. At the other extreme, the manager with an external locus perceives events as beyond his or her control. Numerous studies have found variance in locus-of-control orientations to be linked to strategy and structure dimensions. Consequently, this personality characteristic holds promise for understanding CEO influence over managing international interdependence.

Two theoretical arguments suggest that CEOs with highly internal loci (internal CEOs) will make a greater impact on firm performance as international interdependence increases. The first argument further extends the discussion of information-processing theory. As stated previously, high interdependence is likely to require additional information-processing capacity within a firm because interdependent foreign subunits must exchange information directly (Egelhoff, 1991). However, a parent firm may retain direct control of certain tasks and therefore, information must also flow between the parent and the subunits. Finally, each subunit will manage some activities independently. These information-processing events, Egelhoff wrote, "supplement rather than replace" information-processing requirements in a firm so that "the amount and variety of information will greatly expand" (Egelhoff, 1991: 362). As a consequence, information-processing requirements will increase as international interdependence increases.

Internal managers have been found to seek and use task-relevant information more efficiently than do external managers (Davis & Phares, 1967;

Organ & Greene, 1974; Pines & Julian, 1972). Govindarajan explained that this occurs as a result of internal managers' "belief in the controlling value of their own behavior as the significant determinant of task outcomes" (1989: 254). Assuming outcomes are not predetermined, internal managers acquire task-relevant information and then use it to control outcomes. External managers, who do not expect outcomes to be attributable to their own efforts, would not be likely to spend considerable effort gathering and using task-relevant information.

The second argument concerns a direct link between international integration and managerial internality. Competitive advantage based on international integration has been found to be associated with a higher level of complex innovation—product innovation, process innovation, and unique product feature development—than nonintegrative international approaches (Bartlett & Ghoshal, 1989; Roth & Morrison, 1990). Kobrin's (1991) research suggests that technological innovation is the primary determinant of cross-border integration. In addition, Roth, Schweiger, and Morrison (1991) found that implementing a global strategy necessitated creating a shared philosophy for managing within the firm. They argued that such a philosophy is developed mostly through the use of integrating mechanisms that "induce interactions among managers" (Roth et al., 1991: 380). These interactions provide a forum in which managers can generate, discuss, and resolve divergent perspectives (Miller, 1987; Miller, Dröge, & Toulouse, 1988). Thus, research suggests that international integration requires the management of complex innovation and the creation of a common management philosophy.

Previous studies have found that internal managers prefer a participative work environment (Runyon, 1973) and use persuasive rather than coercive management approaches (Mitchell, Smyser, & Weed, 1975). Furthermore, studies have found that internal CEOs are effective in managing complex product innovation (Miller et al., 1982; Miller & Toulouse, 1986). Internal CEOs are associated with firms that have more new products, engage in more research and development activities, and aggressively pursue both product and process innovations. Thus, in view of the attributes and tasks associated with international integration, internal managerial behaviors and characteristics are congruent with these demands. Combining this argument with the previous discussion concerning the information-processing requirements suggests the following:

Hypothesis 1: Greater internal locus of control on the part of a CEO will have a stronger positive impact on firm performance in the case of high international interdependence than in the case of low interdependence.

Problem-solving style. Jung (1970) suggested that four psychological functions are the basis of different problem-solving styles: sensation, intuition, thinking, and feeling. Sensation and intuition are alternate orienta-

tions toward information gathering, and thinking and feeling are alternate information evaluation orientations. Information gathering and information evaluation have both been linked theoretically to competitive strategy (Govindarajan, 1989). A complete discussion of the two processes can be found in Jung (1970), Meyers (1962), and Hellriegel and Slocum (1979); the focus here is on the characteristics associated with each process that relate specifically to managing international interdependence.

The sensing and intuitive information-gathering orientations are different approaches individuals take to developing an awareness of "people, things, situations, or ideas" (Hellriegel & Slocum, 1979: 225). Sensing individuals are "detail persons" who prefer to use rules, regulations, and standardized procedures. They avoid unstructured problems, which contain considerable uncertainty and ambiguity, preferring routine details and standard solutions. In contrast, intuitive types tend to perceive problems as a whole, seeing integrative meanings and relationships rather than discrete details. They can consider hypothetical possibilities that avoid standard solutions through an "unconscious pattern process" (Hurst, Rush, & White, 1989: 91). This process allows intuitive types to be creative and imaginative and to develop novel solutions to complex, nonroutine problems.

Two arguments suggest that as a firm's international interdependence increases, an intuitive CEO will be more appropriate. Increased international interdependence results in additional complexity and uncertainty. With low interdependence, autonomous subsidiaries in different countries have uniform roles, with each being a minireplication of the parent organization; but as subsidiaries are integrated, systematic differentiation, whereby subsidiary roles and responsibilities vary by location, arises (Bartlett & Ghoshal, 1989). A complex configuration of assets is created, with some activities selectively distributed among local operating units, other activities regionalized, and some resources centralized at the headquarters location (Roth, 1992). Organizational subunits depend, therefore, on other subunits for resources. This dependence results in a complex exchange network with "very significant flows of components, products, resources, people and information that must be managed" (Bartlett & Ghoshal, 1989: 61), thereby increasing the level of international interdependence. International interdependence has been found to be effectively managed through legitimizing diverse perspectives, developing multiple, flexible, and informal coordination processes, and building a shared management philosophy within an organization (Bartlett & Ghoshal, 1989; Roth et al., 1991). Thus, international interdependence apparently requires the use of personal integrating mechanisms rather than bureaucratic forms of control because its complexity and dynamism implies that problems are seldom routine and therefore cannot be regulated by formal rules or standard procedures. In this context, sensing individuals, who prefer structured, precise, and routine problems with little uncertainty or ambiguity, would likely be ineffective.

Externally, the international environment is composed of regulatory,

cultural, language, and operational differences across countries. As a firm's managers pursue integration across locations, they should no longer perceive the environment as separate national entities. As Samiee and Roth (1992) noted, global approaches require the identification of intermarket segments in which well-defined, similar groups of customers exist across national borders. Furthermore, as international competition within an industry increases, competitive responses become linked across locations (Porter, 1985). As a result, international integration requires that managers consider the totality of the external environment. As stated previously, sensing individuals tend to perceive the environment in terms of parts and discrete details whereas intuitive individuals tend to perceive the whole of the external environment. Intuitive types are expected, therefore, to be more appropriately matched to high international interdependence. Therefore,

Hypothesis 2: CEOs who are intuitive will have a stronger positive impact on firm performance in the case of high international interdependence than in the case of low interdependence.

The feeling and thinking information evaluation orientations are different approaches individuals use in making judgments. Feeling types tend to emphasize the personal and emotional content of decisions (Hellriegel & Slocum, 1979). The responses and attitudes of people are more important in the decision making of feeling types than analysis and logic. Feeling types are concerned with how their decisions will affect others, particularly others' feelings. Human interactions and the emotions of individuals serve as the basis for problem solving (Govindarajan, 1989). In contrast, thinking types evaluate information on the basis of formal systems of reasoning and process information analytically and impersonally. Thinking types will be more concerned with the conscientiousness and rigor of their evaluation process than with personal or group values.

In this study, it is posited that feeling types will be more effective in situations characterized by a high level of international interdependence than thinking types. Govindarajan (1989) found that feeling-type managers were more effective in implementing low-cost business unit strategies than differentiation strategies. He predicted this finding from the interdependences associated with a low-cost strategy, which requires that a business unit or subsidiary share resources with other units in order to capture scale economies that support efficiency. Govindarajan argued that, since feeling types are more accommodating toward and cooperative with other individuals (Kilmann & Thomas, 1975), they will be effective in managing interdependence. They make an effort to understand others, incorporate concern for others in their decision calculus, and consider how decision outcomes will affect others. As a result, in situations of high interdependence requiring group coordination, feeling types are more effective than managers with an impersonal decision style that neglects the people involved.

Govindarajan's reasoning can be extended to firms with extensive international interdependence. International interdependence among dispersed subsidiaries occurs in the context of cultural and geographic distances, which are likely to promote opportunities for misunderstandings. Furthermore, collaborative information sharing and problem solving have been suggested as fundamental to effective internationally interdependent relationships (Bartlett & Ghoshal, 1989). Previous research has found that developing a shared managerial philosophy and using informal coordination mechanisms are associated with effective management of international integrative strategies (Bartlett & Ghoshal, 1989; Roth et al., 1991). If effectiveness is achieved largely through interpersonal relationships and consensus building, feeling types, with their emphasis on the human aspects of problems and issues, would be preferable in an international context. Therefore,

Hypothesis 3: CEOs who are feeling types will have a stronger positive impact on firm performance in the case of high international interdependence than in the case of low interdependence.

Functional experience. Numerous studies have supported the notion that the functional specialization of a manager is associated with performance outcomes, with the efficacy of various specializations depending on the distinctive competence or strategic capabilities of the firm (Finkelstein & Hambrick, 1990; Gupta & Govindarajan, 1984; Hitt & Tyler, 1991). I suggest that as the international interdependence between a firm's units increases, managers with broad functional experience will be more effective than managers whose careers have been narrowly specialized. Two arguments support this position. First, as argued previously, interdependence among subunits is associated with increased information-processing requirements within a firm (Galbraith, 1973; Michel & Hambrick, 1992; Tushman & Nadler, 1978). The knowledge base of management has been found to be important for managing increased information requirements (Lawrence & Lorsch, 1967). Pitts (1976) found that firms with essentially interdependent diversification postures developed breadth of managerial organizational understanding by moving executives across subunits, whereas firms emphasizing unrelated diversification strategies did not have such movement. Similarly, Michel and Hambrick's (1992) study indicated that as firms pursue strategies requiring more interdependence between subunits, more interunit moves by executives occur. They argued that the moves occur because, in these situations of interdependence, the need for management to understand corporatewide operational activities is particularly important so that "cooperative opportunities" and "interunit flows" can be designed and managed in a way that creates value.

The second argument concerns a direct association between task requirements and task performance, through a CEO's cognitive framework. Previous studies have confirmed relationships between strategy and partic-

ular managerial functional competencies within firms (Hitt & Ireland, 1985, 1986; Hitt, Ireland, & Palia, 1982). As summarized by Hitt and Tyler (1991), these studies suggest that developing certain types of function-based expertise may be related to an executive's ability to contribute to performance. In highly interdependent firms, a generalized and corporatewide operating knowledge is required (Michel & Hambrick, 1992). Therefore, it follows that the CEO in a firm with extensive international interdependence must understand the overall pattern of resource deployment for core functional activities so that the activities can be coordinated in a manner that avoids unnecessary duplication across subsidiaries, promotes or uses subsidiary competencies, and captures synergistic and scale economies across locations (Bartlett & Ghoshal, 1989; Prahalad & Doz, 1987). This understanding is more likely developed when CEOs have a broad base of organizational experience, allowing them to negotiate and arbitrate interunit interactions and relationships.

Hypothesis 4: A generalized functional background on the part of a CEO will make a greater contribution to firm performance in the case of high levels of international interdependence than in the case of low levels of interdependence.

International background. The preceding arguments can be extended to incorporate the international experience of CEOs. It has been argued that managing international interdependence requires a broad base of functional knowledge. Inasmuch as this interdependence exists across countries, however, understanding the international aspect of interdependence is important. If a firm is composed of nationally distinct subsidiaries that are autonomously managed within each location, corporate intervention in subsidiary activities is minimal. The corporation is predominantly concerned with financial or portfolio-based issues regarding the collective set of entities and provides little country-specific operational direction. The CEO would have little need to influence or understand conditions specific to the international context. International experience on the part of the CEO would more likely be of value where extensive integration across country locations is fundamental to the international strategy of the subsidiaries.

Furthermore, Kogut (1985, 1989) argued that the international network developed by a multinational firm is in and of itself a potential distinctive competence. Operational activities in different country locations enhance the flexibility of the firm so that changes in "exchange rates, competitive moves, or government policy" can be continually exploited (Kogut, 1985: 27). The ability to shift activities and resources across locations allows the firm to "arbitrage" different contextual states and exploit comparative advantages among countries. Therefore, Kogut (1989) asserted that the essence of international competitive advantage is principally operational, centered on the management of transfers and resource flows within the dispersed

network of operations. As stated previously, studies have established a link between the functional competencies within a firm and firm strategy (Hitt & Ireland, 1985, 1986; Hitt et al., 1982). If the international network is indeed a critical resource stock, the CEO who has developed expertise with regard to this source of advantage will best contribute to firm performance.

An understanding of international interdependence would presumably develop through direct responsibility for managing international functions and through international experience. Edström and Galbraith (1977) found that with international movement, managers increased their knowledge of international networks. Furthermore, an understanding of the various competencies within an organization and positive attitudes toward different nationalities and cultures developed. The international assignments resulted in the development of informal information networks among managers, which "creates and sustains knowledge and information to support the decision-making process in an interdependent network of subsidiaries" (Edström & Galbraith, 1977: 258). Interdependence results in continual adjustments and coordination between subunits, which increases the volume and frequency of communication (Victor & Blackburn, 1987). Given that such communication is not easily embedded in standardized procedures or hierarchical reporting relationships (Van de Ven, Delbecq, & Koenig, 1976), a CEO who has established an informal international communication network should be able to more effectively manage international interdependence. Therefore,

Hypothesis 5: CEOs with experience in managing international activities will have a stronger positive impact on firm performance in the case of high international interdependence than in the case of low interdependence.

Hypothesis 6: CEOs with international experience abroad will have a stronger positive impact on firm performance in the case of high international interdependence than in the case of low interdependence.

Contingency hypothesis. The preceding hypotheses represent a congruence approach, in which the individual effect of each CEO characteristic is specified. Although certainly appropriate here, given the lack of prior theory and research examining the relationships being investigated, congruence hypotheses are limited in that their perspective on "coalignment" (Venkatraman & Prescott, 1990) is reductionist: The coalignment is specified as an interaction between two constituent variables and the various components of the proposed relationships are examined independent of one another.

If the set of CEO characteristics is assumed to be an interactive system, congruence hypotheses would fail to capture the effect of the system as a whole (Drazin & Van de Ven, 1985; Fry & Smith, 1987). Where theory suggests multidimensional contingency relationships, a holistic model should be examined. This examination can be achieved by moving to a systems approach in which deviations from an ideal pattern are examined (Govin-

darajan, 1988; Gresov, 1989; Venkatraman & Prescott, 1990). In this study, given that each individual characteristic is related to a state of international interdependence, it follows that alignment among all dimensions will be internally consistent and linked to performance. Specifically, I expected that to the extent a CEO has an internal locus of control, uses an intuitive approach for information gathering and a feeling approach for information evaluation, and has a generalized background with considerable international experience, he or she should make a greater contribution to the performance of a firm with high international interdependence than to that of a firm with low interdependence.

Specifying the interrelatedness of the system parts supports the internal consistency of a proposed system. As discussed previously, information-processing theory suggests that firms can use various design strategies to enhance their information-processing capacity. Increased capacity is necessary to incorporate the additional information arising from the management of high levels of international interdependence and depends primarily on informal organizational characteristics that facilitate lateral processes within a firm. The locus of control and problem-solving style of a CEO are fundamental to the particular informal organization climate he or she emphasizes. Specifically, an internal locus of control and an intuitive-feeling problem-solving style should promote the openness, consensus, and team-building processes that encourage managers to participate in decision making. Furthermore, this participation is not simply at a rational, analytical level. Rather, the interpersonal content of information—the feelings and emotions of the managers involved—is also recognized. Mutual understanding and shared appreciations allow the informal organization to coopt the various individuals affected by the integration across units.

A firm's CEO also serves directly in an integrative role that further supports the informal organization. As Galbraith noted, a general manager must ensure that coordination across interdependent units occurs in a manner that is in the firm's best interests. Effective integrators have a wide range of firm contacts and exposure, can establish trust, and have demonstrated competence in the specialties to be integrated (Galbraith, 1973). In a high interdependence context, a broad base of functional and international experiences allow a CEO to understand multiple perspectives within different subunits, particularly if the CEO is also sensitive to the emotional content of information. The CEO's functional and international experience would thereby precipitate the development, scrutinization, and reconciliation of divergent perspectives (Miller, 1987). These experiences would also develop the CEO's informal communication network, which would support an internal locus-of-control orientation toward seeking and using task-relevant information. In summary, internality, intuitive-feeling problem solving, and wide functional and international exposure should, as a total system, enhance a CEO's ability to contribute to firm performance as international interdependence increases. Such a theoretical configuration of CEO characteristics is specified as an ideal type; CEOs marginally resembling the ideal

type will be less effective than CEOs with a pattern of characteristics resembling the ideal type (Doty, Glick, & Huber, 1993).

Hypothesis 7: A fit between international interdependence and CEO characteristics will be positively associated with firm performance.

METHODS

Industry Selection and Sample

Global industries, the selected domain of this study, were considered appropriate in that research has verified the presence within global industries of firms with both high and low levels of international interdependence (Bartlett & Ghoshal, 1989; Roth & Morrison, 1990). I selected nine industries using Kobrin's (1991) index of transnational integration (defined below). The industries, as defined by Standard Industrial Classification (SIC) code, were agricultural chemicals, aircraft and parts, communications equipment, construction machinery, electronic components and accessories, ethical drugs, household audio and video equipment, measuring and controlling devices, and medical instruments and supplies.

Doz (1986) asserted that global industries vary in type with the importance of international trade and the role of multinational corporations as competitors in the industries. I selected industries for this study with a view toward minimizing effects that could occur from pooling different types of global industries. Kobrin's index is defined as the proportion of international sales in an industry accounted for by intrafirm trade. High levels of intrafirm trade are assumed to indicate extensive "transnational integration" within the industry (Kobrin, 1991: 20). Although other forms of international integration also occur, only product flow data are systematically available for multiple industries. Furthermore, Bartlett and Ghoshal (1989) suggested that product and product component flows within international firms are the most fundamental form of integration, and Porter (1986) argued that intraindustry trade is a good indicator of industry globalization. Thus, the use of Kobrin's index isolated industries with a common form of integration and provided assurance that substantial international interdependence existed within them.

Medium-sized firms within each industry, defined as those having sales between \$25 and \$500 million, were identified through *Compact Disclosure*. This database includes public companies with a minimum of \$5 million in assets and at least 500 shareholders of one class of stock that have filed a *Securities and Exchange Commission* (SEC) document, such as a 10-K or 20-F, in the last 18 months. To be selected to represent a given industry, a firm had to have listed it as its primary industry. The initial set consisted of 311 independent firms, excluding strategic business units and operating divisions of larger organizations.

To reduce the problems associated with common methods variance, I

TABLE 1
Characteristics of Respondents and Nonrespondents^a

Characteristics	Responding Businesses	Nonresponding Businesses	F
Total assets ^b	102,685,000	130,735,000	1.75
Total number of employees	1,074	1,279	1.07
Total sales ^b	105,073,000	117,996,000	0.90
Net income ^b	4,021,000	2,546,000	0.52
Five-year sales growth	17	25	3.00
Earnings per share	.50	.28	1.45
Five-year earnings growth	17	22	0.31
Five-year income growth	20	29	0.71

^a No significant differences at the .05 level emerged.

^b Value is expressed in U.S. dollars.

used both primary and secondary data for this study. Secondary data were collected for the performance measure, and the CEO of each firm provided information regarding his or her own characteristics on a questionnaire. Responses were received through the mail from 126 executives, but only 74 of the responses could be attributed to CEOs. I conducted analyses using the 74 CEO responses. An analysis to assess nonresponse bias indicated that the responding firms did not differ significantly from the nonresponding firms in total assets, number of employees, total sales, net income, five-year sales growth, earnings per share, five-year earnings growth, or five-year income growth. Table 1 provides the details of this analysis. Furthermore, an additional analysis indicated that the proportional breakdown of respondents by industry closely paralleled that of the initial group. Thus, it appeared that the responding businesses were generally representative of their respective industries.

Measures

Performance. Firm performance was defined as average income growth during the five years prior to the measurement.¹ Dierickx and Cool suggested that the "rent-earning" capacity of a nontradeable asset is realized as it is actually deployed into product markets (1989: 1509). Income growth over a five-year time horizon provides an indication of the extent to which resource stocks have been deployed and of the market reaction to that deployment. In addition, the sustainability of a stock position, based on nontradeability, nonimitability and nonsubstitutability, should be partially reflected by the extent to which the associated income stream increases over time. Finally, income growth should be less influenced by variance in asset configurations

¹ I also measured performance as average earnings growth over five years and considered use of a measure combining both indicators. However, given that income growth and earnings growth were highly correlated ($r = .93$) and that there were more missing observations for earnings growth, only income growth was used in the analysis.

than are traditional accounting-based ratios. Accounting-based ratios would likely be misleading for the corporations studied here given the variance in asset age, inventory valuation methods, and depreciation schedules. The income growth measure was taken from 10-K reports as compiled by *Compact Disclosure*.

International interdependence. International interdependence increases as an organization performs more of its activities in multiple international locations and those locations are coordinated or integrated. Thus, I asked respondents to "indicate the location and the extent to which each functional activity is coordinated across country locations within your business." I drew on previous scales decomposing the value chain of an organization (Roth et al., 1991) and asked respondents whether each activity was "performed in one country," "performed in multiple countries and managed nationally," "performed in multiple countries and coordinated within regions," or "performed in multiple countries and coordinated globally." The activities listed were raw materials and parts procurement, manufacturing, process design and improvement, marketing, sales activities, product design and improvement, finance, accounting and legal functions, and employee management and development. The responses for all nine activities were summed to create an index. A low score indicated that the activities were performed in a single country and therefore, little international interdependence existed. A high score indicated extensive interdependence as activities were located in multiple country locations and coordinated worldwide.

Three procedures were used to examine the reliability of this measure. First, I assessed internal reliability, finding an acceptable Cronbach's alpha of .86. Second, I asked each CEO to indicate, for the major industry segment in which his or her firm competed, how characteristic each of the following statements was: "business activities are susceptible to global scale economies," "competitors market a standardized product worldwide," "new product introductions tend to occur in all major international markets simultaneously," and "competitive actions taken in one country affect other country locations." Ratings were made on a seven-point Likert scale and an index was created to serve as a proxy for international interdependence, assessed in terms of industry structure. Essentially, I expected that if a firm positioned itself in industry segments confronting high global competitive pressures, it would be characterized by a high level of global coordination. As anticipated, the values for the international interdependence index and the industry structure index were correlated positively and significantly ($r = .35, p < .001$). Third, I administered the questionnaire to an additional top-level executive (the chief financial or chief operating officer) in 27 firms to ensure that the interdependence measure represented firm-level data and not the idiosyncratic perspectives of single individuals. The product-moment correlation associated with the interjudge reliability was found to be acceptable ($r = .73, p < .001$).

Locus of control. I used Rotter's (1966) E Scale, as modified by Govindarajan (1988), to measure each CEO's locus-of-control type. Numerous

strategy studies have successfully used this scale (Govindarajan, 1988, 1989; Miller et al., 1982; Miller & Toulouse, 1986). Responses to 11 items are summated to provide a total internal-external score, with high values indicating an internal locus of control and low values, an external locus.

Problem-solving style. The shortened version of Form F of the Meyers-Briggs Problem-Solving Styles Indicator was used. Several studies have used this instrument, which is comprehensively discussed in Govindarajan (1989) and in Hellriegel and Slocum (1979). The short form asks respondents a series of forced-choice questions, instructing them to "indicate which response comes closest to how you usually feel or act." A sample question is "Are you more careful about: (A) people's feelings or (B) their rights?"

Functional experience. Each respondent was asked to "summarize the functional areas of your career assignment" using a three-point scale in which 0 equaled "have not been assigned to this functional area" and 2 was "have spent an extensive amount of time in this functional area." The areas listed were production, engineering, research and development, marketing and sales, general management, finance, accounting, and law. The procedure used by Hitt and Tyler (1991) provided the basis for differentiating executives with similar functional backgrounds. I used a cluster analysis algorithm to minimize within-group variance relative to between-groups variance and used the evaluation criteria outlined by Harrigan (1985) and Klassorin (1980) to determine the final clustering solution. A four-cluster solution was accepted, and the groups corresponded directly to four groups found in the Hitt and Tyler (1991) study.

The first group, the broad-based cluster, contained 23 respondents having the broadest experience, particularly across the primary activities of engineering, research and development, production, and marketing. The second group, the marketing management cluster, was the most focused group, consisting of 17 respondents having extensive experience in marketing and sales and general management but little experience in the other functional areas. Cluster three, the technical management cluster, included 8 CEOs having the highest levels of experience in the production, engineering, and R&D areas but little other functional experience. The 25 respondents in cluster four, the core business cluster, had the most extensive marketing and sales, finance, accounting, and law experience but little or no experience in the technical areas. Thus, the broad-based cluster had CEOs with a wide breadth of functional experience whereas the other three groups consisted of CEOs with more narrow functional backgrounds. In data analyses, I coded each type of functional experience as a dummy variable.

International background. Each respondent was asked to indicate his or her total accumulated (1) experience in an international function or in a function that included international responsibilities and (2) time spent on overseas assignments. For response rate considerations, I used Likert-type response categories for both measures (1 = less than 1 year, 2 = 1 to 3 years, 3 = 4 to 6 years, 4 = 7 to 9 years, 5 = 10 to 12 years, 6 = 13 to 15 years, 7 = 16 years or more).

To examine the reliability of the functional experience and international background information, I sought background information on 15 randomly selected CEOs from secondary sources, such as the Reference Book of Corporate Managements and Who's Who volumes. Information was found for 11 CEOs and, although information was not available for each variable for each executive, what was available was consistent with the self-reported information. This tentative procedure suggested that the CEOs provided reliable information regarding their functional and international backgrounds.

Control Variables

Three control variables were used in the primary analysis. Firm size, measured as total annual sales, was controlled for as previous research has indicated that size is associated with performance differences (Cummins & King, 1973; Govindarajan, 1988). Given the potential for firm diversification and firm internationalization to influence the international interdependence-CEO characteristics relationships, I considered it important to also control for possible confounding influences associated with those two variables. Firm internationalization was measured as international sales expressed as a percentage of total firm sales. Firm diversification was measured by the number of industries (as defined by four-digit SIC code) outside a firm's primary industry in which the firm competed. The data for these three control variables were taken from *Compact Disclosure*.

Analysis

The first six hypotheses were examined by estimating a regression equation with an interaction term. I selected this approach because the focus of the hypotheses is explaining the variance in firm performance attributable to the interaction between interdependence and a CEO characteristic, rather than the effect of the congruence of the two variables. I first estimated an equation consisting of the independent and control variables and then estimated an equation incorporating an interaction term. Support for a hypothesis would exist when (1) the results of a given interaction model were significant, (2) an interaction term was significant and in the hypothesized direction, and (3) the values of the change in R^2 resulting from introducing the interaction term and its associated F were significant. Readers are referred to Schoonhoven (1981) and Govindarajan and Fisher (1990) for a comprehensive discussion of this procedure. It is important to note that for equations estimated with an interaction, results vary with changes in the points of origin of the two main variables and therefore, the coefficients of the independent variables are not interpretable (cf. Govindarajan, 1989; Govindarajan & Fisher, 1990; Southwood, 1978).

The analysis of the contingency hypothesis, Hypothesis 7, was performed using the four-step methodology Drazin and Van de Ven (1985) suggested. First, all variables were standardized to establish uniform scales. Second, I developed ideal profiles of the CEO characteristics and international interdependence, using theoretical profiles based on the congruence

hypotheses. Profiles were developed for a context of high international interdependence and a context of low international interdependence. Cluster analysis was then used to segment the firms into two contextual conditions on the basis of the international interdependence variables. Third, I calculated a distance-effectiveness index for each CEO by measuring the Euclidean distance between the theoretical profile and the CEO's actual ratings on the various dimensions. Thus, the index compares the consistency of a CEO's characteristics, given a particular international interdependence state, to the ideal profile. Finally, I assessed the relationship between this effectiveness index and firm performance. Essentially, as distance increases, fit decreases and, therefore, lower performance is expected. Conversely, the closer the characteristics of a CEO to the ideal profile, the smaller the distance and the higher the firm performance. Thus, a significant, negative correlation between performance and the distance measure indicates a consistent fit or design pattern.

RESULTS

Table 2 provides the summary statistics for the variables. Table 3 gives results of the regression analysis in terms of the effects of locus of control, information-gathering style, and information evaluation style management characteristics. The coefficient of the interaction term in model 2 is positive and significant and the interaction results in a significant increase in the explained variance. To examine whether the relationship was monotonic or nonmonotonic, I examined the partial derivative of model 2 with respect to the management characteristic variable (Govindarajan, 1989; Govindarajan & Fisher, 1990). This examination revealed a point of inflection for the slope within the range of values for international interdependence in the data (19.58; minimum = 9.0, maximum = 36.0). Thus, for firms with high international interdependence, CEO internal locus of control has a positive impact on performance; however, for firms with low international interdependence, this characteristic's impact on performance is negative. Results thus support Hypothesis 1.

Hypothesis 2, concerning the influence of international interdependence on the utility of information-gathering style, was not supported as the interaction term was not significant (Table 3, model 4). As Govindarajan (1986, 1989) noted, the only use for an equation estimated with an interaction term, like model 4, is to assess the nature and significance of the influence of the interaction term on the dependent variable. Thus, following the procedure used by Govindarajan (1989), I assessed the universal impact of the independent variable by examining the correlation between it and the dependent variable. The correlation between information-gathering style and firm performance was not significant, indicating that the former did not have a direct effect on performance either.

As the results for models 5 and 6 in Table 3 indicate, the regression coefficient for the interaction of international interdependence and informa-

TABLE 2
Summary Statistics and Zero-Order Correlations

Variables	Means	s.d.	1	2	3	4	5	6	7	8	9	10
1. International interdependence	19.24	8.86										
- 2. Locus of control	9.00	1.99	.22†									
3. Information-gathering style	3.02	1.20	-.08	.03								
4. Information evaluation style	5.83	1.40	-.03	.12	.28*							
5. Broad-based experience	0.31	0.47	.06	-.06	-.07	-.07						
6. Marketing management	0.23	0.42	.04	.02	-.13	-.20	-.37**					
7. Technical management	0.11	0.31	-.24*	-.03	.09	.01	-.23*	-.19				
8. Core business experience	0.34	0.48	.05	.05	.13	.23†	-.48***	-.39***	-.25*			
9. International experience	5.18	1.93	.18	-.02	-.16	.17	.23†	.02	-.19	-.11		
10. International responsibility	1.82	1.41	.03	-.36**	-.15	-.08	.13	.07	-.08	-.14	.24*	
11. Income growth	19.51	36.40	-.01	-.11	.15	.01	-.09	.05	-.12	.13	.08	.08

† p < .10

* p < .05

** p < .01

*** p < .001

TABLE 3
Results of Multiple Regression Analysis for Three CEO Characteristics^a

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	51.67 (117.68)	40.26 (195.28)	-10.33 (116.00)	-5.23 (120.48)	6.59 (115.99)	21.96 (144.57)
Management characteristic						
Locus of control	-3.67 (5.85)	-39.15* (17.25)				
Information-gathering style						
Information evaluation style						
International interdependence	0.12 (1.20)	-19.52* (9.14)	-0.92 (1.04)	-1.49 (2.80)	-0.56 (0.97)	-9.23* (14.60)
Firm size	1.35 (9.83)	1.05 (9.10)	4.48 (10.39)	4.94 (10.80)	2.52 (9.44)	-1.16 (9.00)
Firm internationalization	-0.34 (0.45)	-0.02 (0.44)	-0.35 (0.36)	-0.32 (0.39)	-0.36 (0.35)	-0.26 (0.33)
Firm diversification	0.90 (7.42)	-8.28 (8.07)	-2.83 (6.18)	-2.87 (0.65)	-1.61 (5.83)	-1.36 (5.28)
Interaction		2.00* (0.92)	0.18 (0.80)	0.18 (0.80)	-1.53* (0.68)	
R ²	.05	.23	.10	.10	.05	.19
F	0.25	1.02	0.54	0.44	0.30	1.12†
ΔR ²		.18	.00	.14	.14	
F			4.46**		4.82**	

* Unstandardized regression coefficients are shown; standard errors are in parentheses.

† p < .10

* p < .05

** p < .01

tion evaluation style is significant. The interaction also results in a significant increase in explained variance. The partial derivative of model 6 over the information evaluation style variable indicates the inflection point is 18.84, which is within the range of observed values for international interdependence. Thus, the evidence supports Hypothesis 3; at high levels of international interdependence, CEO use of a feeling-type information evaluation style is associated with higher performance.

Table 4 displays the regression analysis results for the effect of functional experience. The second model indicates that international interdependence moderates the relationship between marketing management and performance as the corresponding regression coefficient of the interaction term is significant. The coefficient is negative, which means that marketing management experience contributes to firm performance when international interdependence is low. The inflection point of the slope is 19.54, within the interdependence range. Thus, a marketing management specialization hin-

TABLE 4
Results of Multiple Regression Analysis for Functional Experience^a

Variables	Model 1	Model 2
Intercept	-15.35 (94.73)	-46.05 (95.33)
Functional experience		
Broad-based	-12.43 (15.90)	4.68 (53.69)
Marketing management	-2.55 (18.03)	94.98* (85.51)
Technical management	-41.77 (27.43)	-11.85 (85.51)
International interdependence	-0.82 (1.00)	1.38 (1.63)
Firm size	6.76 (8.94)	5.75 (8.95)
Firm internationalization	-0.37 (0.34)	-0.51 (0.34)
Firm diversification	-2.09 (5.55)	-0.32 (5.52)
Broad-based experience by interdependence		-0.95 (2.43)
Marketing management by interdependence		-4.86* (2.15)
Technical management by interdependence		-1.10 (6.14)
R ²	.12	.27
F	0.55	1.98†
ΔR ²	.15	
F	2.62*	

* Unstandardized regression coefficients are shown; standard errors are in parentheses.

† p < .10

* p < .05

ders performance when international interdependence is high and benefits performance when international interdependence is low. No specific functional experience was found to affect performance positively when international interdependence was high. In particular, no support was found for Hypothesis 4 as broad-based functional experience was not associated with higher performance.

Table 5 gives results for the analysis examining international responsibility and international experience. Hypothesis 5, describing the influence of international interdependence on the utility of international responsibility, was not supported as the interaction term was not significant (Table 5, model 2). The correlation between international responsibility and firm performance was also not significant. Thus, it appears that international responsibility has neither an interactive nor a direct effect on performance. In contrast, models 3 and 4 in Table 5 support Hypothesis 6, which addresses the impact of international interdependence on the utility of international experience. The inflection point of the slope was calculated and found to be 23.82, again within the range of observed values for international interdependence. Thus, for firms with a high level of international interdepen-

TABLE 5
Results of Multiple Regression Analysis for International Responsibility and International Experience^a

Variables	Model 1	Model 2	Model 3	Model 4
Intercept	-21.43 (90.21)	20.28 (106.94)	22.28 (93.84)	-36.58 (92.45)
Management characteristic				
International responsibility	6.83* (3.80)	0.69 (9.14)		
International experience			6.00 (6.94)	48.84** (20.54)
International interdependence	-0.61 (0.89)	-1.84 (1.88)	-0.48 (0.93)	2.55 (1.63)
Firm size	4.00 (8.23)	2.48 (8.55)	1.53 (8.71)	0.76 (8.21)
Firm internationalization	-0.73† (0.40)	-0.72† (0.40)	-0.41 (0.36)	-0.14 (0.36)
Firm diversification	-2.41 (5.19)	-1.08 (5.53)	-4.39 (6.21)	-7.05 (5.97)
Interaction		0.28 (0.38)		2.05** (0.93)
R ²	.12	.14	.06	.20
F	0.88	0.82	0.38	1.17†
ΔR ²		.02		.14
F		0.53		4.65**

^a Unstandardized regression coefficients are shown; standard errors are in parentheses.

† p < .10

* p < .05

** p < .01

TABLE 6
Correlations of Distance Measures and Performance

International Interdependence	N	Income Growth
High	29	-.40*
Low	44	-.45*

* $p < .05$

dence, the impact of strong CEO international experience on firm performance is positive, but when international interdependence is low, the impact is negative.

Table 6 reports results of the systems analysis. Strong support was found for the effect of the set of CEO managerial characteristics on firm performance. For the high interdependence group, the distance measure was negatively correlated to five-year average income growth ($r = -.40, p < .05$). For the low interdependence group, the distance measure was also negatively related to five-year average income growth ($r = -.45, p < .05$). Thus, for both groups, performance declined as firms moved away from their appropriate theoretical profiles. To further assess these results and ensure that the theoretical profiles represented the best approach to system specification, I also examined empirically derived profiles based on the two firms with the best performance in each group. I recalculated the distance measures and reassessed the correlation between each distance measure and performance. This procedure yielded weaker results, suggesting that the theoretical specification accounts for performance deviation more effectively than an empirically specified profile.

DISCUSSION AND CONCLUSIONS

This study was designed to interpret the interactive effect of international interdependence and CEO characteristics on firm performance. Extending a resource-based approach, I have forwarded the position that different levels of organizational international interdependence necessitate different CEO characteristics if a CEO is to best contribute to firm performance. Information-processing theory guided the selection and specification of the particular CEO characteristics that are required, with my assumption being that international interdependence increases an organization's need for information-processing capacity. It was further suggested that CEO characteristics will affect firm performance as a set.

For medium-sized firms in global industries, the results provide considerable support for the view that the characteristics of CEOs and international interdependence have an interactive effect on performance. The specific findings can be summarized as follows: (1) Information-gathering style and international responsibility characteristics do not influence firm performance. (2) The individual interactions of a CEOs' locus of control, information evaluation style, and international experience with international inter-

dependence influence firm performance. (3) A functional specialization in marketing and sales contributes to firm performance when international interdependence is low. (4) In firms with a high level of international interdependence, the overall pattern of CEO characteristics is positively related to firm performance. (5) In firms with a low level of international interdependence, the overall pattern of CEO characteristics has an important influence on firm performance when that pattern is consistent with the hypothesized theoretical profile.

A rather consistent pattern of CEO characteristics was found to be important as international interdependence increases. Managers with internal loci of control seek task-relevant information, an action consistent with their view that they can change or control events. Within a firm, this type of control is presumably manifested through an emphasis on a participative work environment and the use of persuasion rather than coercion. Managers emphasizing personal and emotional concerns in their information evaluation and decision making, or feeling types, were identified with strong firm performance. Similarly, CEOs contributed more to performance as their international experience through expatriate assignments increased. These characteristics are likely to be mutually reinforcing. Research has suggested that individuals who are effective in expatriate assignments have (1) a greater array of skills needed for establishing close relationships with individuals in a host environment and (2) a higher level of perceptual abilities allowing correct interpretation and evaluation of the host environment and its actors (Black, Mendenhall, & Oddou, 1991: 294). Essentially, cross-cultural sensitivities are thought to provide an expatriate feedback regarding the environment, thereby enhancing his or her adaptation. These cross-cultural skills and abilities closely parallel those of feeling types. Furthermore, CEOs with internal loci of control would be active in actually soliciting or gathering feedback information. Thus, it would appear that feeling-internal types would be well suited for international assignments. Presumably, given that interpersonal and cross-cultural competencies both imply an accommodating attitude toward others and an awareness of the immediate environment, international assignments would likely enhance feeling-internal types' understanding of local organizational settings as well as the environmental context.

The specific CEO characteristics examined were based on information-processing theory, with my assumption being that the creation of lateral relations is important to managing the greater information-processing demands associated with high levels of international interdependence. The results offer support for the importance of a CEO role in the creation of lateral relations. Characteristics associated with matched CEOs in the high interdependence context suggest the need for CEOs to be "internationally networked." Networking mechanisms enhance lateral relations through promoting international communication (Ghoshal, Korine, & Szulanski, 1994). Furthermore, characteristics that promote trust across units, facilitate the sharing of information, and develop team-oriented consensus decisions cre-

ate lateral relations (Galbraith, 1973). Thus, the results suggest that as international interdependence increases, a CEO's role as an integrator and manager of the decision-making process becomes increasingly important.

Although individual CEO characteristics were found to enhance performance in different interdependence states, the total pattern of characteristics is positively related to firm performance. Bivariate analysis is a way to begin to understand relationships that have received little investigation in the international context. However, it would appear that moving toward more complex and holistic models has merit. Even though information gathering and three of the functional experience classifications were not related to performance individually, they evidently take on added importance when considered in the context of the other variables, thereby confirming a systems conceptualization of fit. Govindarajan and Fisher (1990) suggested going beyond a systems approach and toward an equifinality approach in which the importance of variables may vary with the effects of a total system. In addition, it is possible that various patterns of emphasis among the characteristics are equally viable or that characteristics can substitute for one another (Govindarajan, 1989). Using a systems approach while still maintaining that there is an optimal configuration allows for differing patterns to be equidistant from the optimal profile, even though these patterns are not identified. Doty and colleagues (1993) illustrated how the equifinality assumption can be modeled in multiple ideal types or equally effective and internally consistent patterns. Doing this would involve identifying a small, finite set of effective ideal types, specific ideal types matched to particular contextual states, or multiple ideal types effective within multiple hybrid contexts (Doty et al., 1993). Thus, although this study takes a preliminary step toward identifying a system of characteristics that may influence firm performance, developing more complex and integrative models will likely lead to further developments in understanding the patterns by which CEOs influence firm performance.

Overall, the results provide strong support for the idea that CEO characteristics are influential in the context of different interdependence states, as specified through a resource-based view of the relationship. Barney (1986) noted that the resource stock of a firm includes complex social phenomena, such as the relationships that exist among managers within a firm. The predominant theme of each relationship between CEO characteristics and performance developed in this study was how alternate characteristics allow a CEO to influence an organization's ability to process information through enhanced lateral processes. In essence, the characteristics were assumed to allow CEOs to influence socially complex resources that consequently add value through effective management of international interdependence. Barney (1986) acknowledged the potential importance of attributes of firm cultures for improving performance outcomes but questioned whether such attributes can actually be engineered. This study does not resolve the causal ambiguity regarding the process by which a CEO can influence socially complex resources; however, the findings do suggest that the CEO has a role

in the development or utilization of these resources. Additional research is warranted to further explain the development of social resources as well as how the development process can occur in a manner that retains the imperfect imitability of resources.

The results of the study have two important practical applications. First, in regard to the CEO selection process, the findings are consistent with those of other studies suggesting the importance of aligning the choice of a manager to the nature of a firm's strategic tasks (Govindarajan, 1989). The need to match managers to strategic tasks also implies the need for organizations to provide opportunities within management development processes that facilitate or reinforce particular orientations that are consistent with the level of international interdependence within the firms. Second, the cost of expatriate assignments has received considerable attention in the business literature. The alternative often advocated is supplanting expatriate assignments with local hiring. When international interdependence is high, however, it appears that developing the international experience of managers is critical. In fact, the results suggest it is the experiential aspect of assignments that is of value, as nonexperiential exposure through responsibility for international functions did not influence a CEO's contribution to performance. Thus, developing an appreciation for the integration and linkages supporting international interdependencies apparently occurs most effectively, at least from a normative perspective, through experiential opportunities. As Edström and Galbraith (1977) noted, it is through actually interacting within different international locations that an individual develops knowledge of an overall international network and coordinated informal structures. A corresponding network of organizational relationships and contacts is created and serves as an informal information source, thereby increasing the capacity for communication within the firm.

Several directions for future research could extend this study. Although evidence supporting the notion that CEOs influence performance outcomes emerged, a CEO is only one component of a firm's top management team. The link between top management team characteristics and organizational outcomes such as strategy and performance is becoming more established in the management literature (Finkelstein & Hambrick, 1990; Hambrick & Mason, 1984). In the model this study puts forth, I assumed that a mismatch involving any required CEO characteristic induced a deficit in an organization. However, it is certainly possible that the other members of the firm's top management team or of its dominant coalition will have characteristics that could compensate for a CEO's limitations. For example, a CEO's failure to attend to the emotional or personal content of information and decisions might not influence performance negatively if the firm's top management team emphasized feeling-style problem solving.

Second, this study focused on matching a CEO's characteristics to the task requirements associated with a firm's resource stocks. However, it was also acknowledged that the resource accumulation process includes a flow component. From a resource-based view, although the relationship between

resource flows and outcomes will occur only in the long term, it is also likely that the CEO's influence on resource flows is greater and more direct than the influence exerted on stocks. There would be theoretical merit in gaining further understanding of the nature and process of the CEO role with respect to these stock flows, particularly as this role relates to international resource flows.

Third, this study attempted to define industry context rather narrowly. I considered examining the interaction of CEO characteristics and international interdependence within a global industry context a conservative test of the interactive effects. However, additional variance in interdependence levels could be captured through incorporating additional international industry types, from the multidomestic to the global, and by defining international interdependence in respect to specific value activities. This expansion might allow additional specificity regarding the alignment of different characteristics with particular types and forms of international interdependence. Thus, although this study did not find that functional CEO background strongly influenced performance outcomes in the high interdependence context, more narrowly matching functional background with a firm's specific type of interdependence might engender a more appropriate specification of this posited relationship. Finally, this study focused exclusively on medium-sized firms. There is some evidence that managerial effects may be more pronounced in small organizations than in large ones since the former are less constrained by organizational inertia (Finkelstein & Hambrick, 1990; Miller et al., 1982). Thus, future studies should assess the generalizability of the present findings to large firms.

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EFFECTS OF IMPRESSION MANAGEMENT ON PERFORMANCE RATINGS: A LONGITUDINAL STUDY

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We tested a model proposing that subordinates' impression management behavior influences performance ratings through supervisors' liking of and perceived similarity to subordinates. We measured impression management behavior, liking, and similarity six weeks after the establishment of supervisor-subordinate dyads and measured performance ratings after six months. Results indicated support for the overall model and several specified relationships. Additionally, impression management behavior had a significant, indirect impact on performance ratings. Implications of the results for research on impression management and performance appraisal are discussed.

Over the past 30 years, social psychologists have devoted much research attention to impression management and the related topics of self-presentation and ingratiation (Jones, 1964; Leary & Kowalski, 1990; Schlenker & Weigold, 1992). Drawing on Schlenker (1980), we defined impression management as those behaviors individuals employ to protect their self-images, influence the way they are perceived by significant others, or both. Most impression management research has been conducted at the dyadic level and has focused on the types of strategies employed (Buss, Gomes, Higgins, & Lauterbach, 1987), motivations behind the use of each strategy (Arkin, Appleman, & Berger, 1980), individual characteristics of agents and targets related to the use of impression management (Baumeister, & Jones, 1978; Schlenker & Leary, 1982a), and reactions of targets to impression management behaviors (Schlenker & Leary, 1982b).

Following Wortman and Linsenmeier's (1977) suggestion that impression management findings in social psychology research may generalize to organizational settings, organizational researchers began to study impression management (e.g., Ansari & Kapoor, 1987; Ashford & Northcraft, 1992; Baron, 1983; Bohra & Pandey, 1984; Caldwell & O'Reilly, 1982; Fandt &

We would like to thank the three anonymous reviewers for this journal for their detailed and insightful comments on earlier drafts of this article and Susan Adams, John Maslyn, and Dean Stilwell for their research assistance. The authors contributed equally to this research effort.

Ferris, 1990; Giacalone, 1985; Hinkin & Schriesheim, 1990; Judge & Ferris, 1993; Kipnis & Schmidt, 1988; Kipnis, Schmidt, & Wilkinson, 1980; Mowday, 1979; Schriesheim & Hinkin, 1990; Vecchio & Sussmann, 1991; Wayne & Ferris, 1990; Wayne & Kacmar, 1991; Yukl & Falbe, 1990; Yukl & Tracey, 1992). Most of this research has focused on identifying impression management tactics or developing theoretical models of the impression management process. Although much has been accomplished within this stream of research, only a few studies have empirically examined the relationship between impression management and performance ratings (Ferris, Judge, Rowland, & Fitzgibbons, 1994; Kipnis & Schmidt, 1988; Wayne & Ferris, 1990; Wayne & Kacmar, 1991).

To date, impression management studies in the performance appraisal area have either been conducted in a laboratory setting or have employed cross-sectional designs with established supervisor-subordinate dyads. Whereas much can be learned from these studies, longitudinal research with newly formed supervisor-subordinate dyads is needed in order to determine whether subordinate impression management behavior affects performance ratings over time. Liden and Mitchell (1988) and Tedeschi and Melburg (1984) argued that impression management can be used for either short-term or long-term purposes. Tedeschi and Melburg made a clear distinction between tactical impression management behaviors, targeted at obtaining immediate gratification, and strategic impression management behaviors, geared for influencing future outcomes. The lack of longitudinal research in the area has precluded the possibility of investigating the long-term or strategic uses of impression management. One purpose of the current study was to develop a theoretical model for understanding the long-term effects of subordinate impression management behavior on supervisor performance ratings and to empirically examine hypotheses based on this model with a longitudinal research design.

Few studies have examined the process by which impression management influences performance ratings, and they have not investigated alternative explanations for apparent impression management effects. Thus, a second purpose of the current study was to examine the processes surrounding the influence of impression management on performance ratings. In particular, we examined supervisors' liking of and perceived similarity to subordinates as intervening variables in the relationship between impression management and performance ratings. In addition, we explored the impact of demographic similarity on performance ratings through its effect on perceived similarity and liking.

HYPOTHEZED MODEL OF THE EFFECTS OF IMPRESSION MANAGEMENT ON PERFORMANCE RATINGS

In the theoretical model guiding our research (Figure 1), we propose that subordinates' impression management behaviors influence supervisors' liking of the subordinates as well as the supervisors' perceptions of similarity

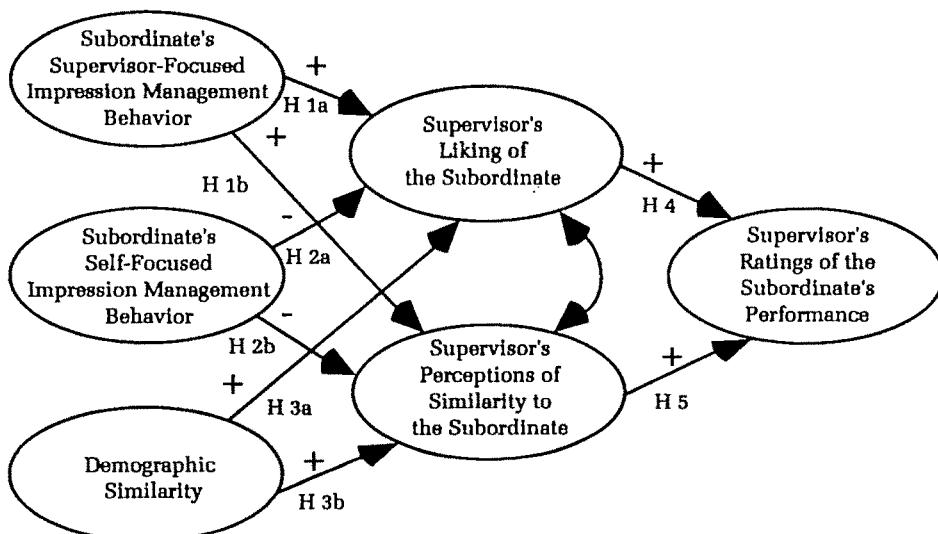
to the subordinates. Liking and perceived similarity assessed at an initial point in time in turn relate to supervisory ratings of the subordinates' performance made later. The model is not intended to be a comprehensive model of social influence processes in performance appraisal. Other models, such as Ilgen and Feldman's (1983) and Villanova and Bernardin's (1989, 1991), are more inclusive.

Impression Management Strategies

A vast array of impression management strategies have been reported in the relevant literature. Many of these focus on defensive tactics (Tedeschi & Melburg, 1984; Tedeschi & Norman, 1985) typically used in response to poor performance (Liden & Mitchell, 1988), such as accounts, excuses, apologies, self-handicapping, learned helplessness, self-deprecation, alcoholism, and drug abuse. Because the current investigation did not focus on subordinate poor performance, defensive strategies were not of interest. In contrast to those strategies, assertive impression management tactics are used by individuals to establish a particular identity for an audience and are not merely a reaction to situational demands (Tedeschi & Melburg, 1984).

Self-presentation and other-enhancement, two main types of impression management, provided the focus for the current study. Self-presentation strategies, intended by an individual, or agent, to make himself or herself more appealing to a target (Jones, 1964), are accomplished either verbally or with nonverbal cues such as smiling, eye contact, and touching (DePaulo, 1992; Drake & Moberg, 1986). Other-enhancement refers to the favorable

FIGURE 1
Hypothesized Model of the Effects of Impression Management on Performance Ratings



evaluation of, or agreement with, the target. Flattery, favor-doing, and opinion conformity are common forms of other-enhancement that have been shown to positively influence target individuals (Ralston & Elsass, 1989; Tedeschi & Melburg, 1984).

The agent's objective in the use of all impression management strategies is to favorably influence attributions made by the target (Jones & Wortman, 1973). Because prior research has shown that lower-status agents frequently use impression management in attempts to influence higher-status targets (Gardner & Martinko, 1988; Leary & Kowalski, 1990; Pandey, 1981; Ralston, 1985; Yukl & Tracey, 1992), subordinate impression management targeted at supervisors represents an especially rich setting for research on impression management (Bohra & Pandey, 1984).

Several studies have examined the effects of subordinate impression management behavior on performance ratings. In particular, Kipnis and Schmidt (1988), Wayne and Ferris (1990), Wayne and Kacmar (1991), and Ferris and colleagues (1994) found support for the relationship between subordinate impression management behavior and supervisor performance ratings. Although these studies have provided useful results, they have a number of limitations. Specifically, the prior studies have been conducted either in laboratory settings in which students were used as subjects or in field settings with established supervisor-subordinate dyads and cross-sectional designs. Thus, although significant relationships between impression management and performance ratings have emerged, the causal relationship is unclear, the intervening processes are not well understood, and the impact of impression management behavior on performance ratings over time is unknown.

Individuals can use many impression management behaviors to accomplish either short- or long-term goals (Tedeschi & Melburg, 1984). For example, a subordinate may do a favor for a supervisor in the morning because the former plans to ask for the afternoon off. In contrast, the subordinate may do favors for the supervisor over time in the hope of getting a good annual performance appraisal. To influence salient outcomes such as performance ratings, compensation, and promotions, individuals would seem to need to use impression management behaviors strategically over time.

Cognitive Information Processing

Cognitive information processing approaches provide a theoretical framework for explaining how supervisors translate their perceptions of subordinate impression management into initial impressions, encode them into memory, and later retrieve and decode them when rating the subordinates' performance (Lord, 1985; Schneider, 1991).¹ Successful subordinate impres-

¹ Encoding involves the translation of perceived social information into existing schema or categories in one's memory. For example, if we notice on several occasions that an individual is quiet and avoids interaction with others, we may encode the person as fitting our introvert

sion management behaviors favorably alter supervisor attributions of a subordinate (Jones & Wortman, 1973; Wood & Mitchell, 1981). Attributions in turn provide information the supervisor uses in categorizing or recategorizing the subordinate (Schneider, 1991).

Subordinate impression management may have the most salient influence on supervisors when the relationship between the two is developing. This time is when initial categorization of the subordinate occurs (Feldman, 1986). In many cases, supervisors begin to process information about a new subordinate before the individual's first day on the job, or even before interviewing the prospective employee. It has been found that interviewers, who are often the applicants' future supervisors, form impressions of applicants before interviews on the basis of preemployment information, such as résumés (Phillips & Dipboye, 1989). Thus, the categorization of information based on schemata may occur prior to an interview (Dipboye, 1989). However, even at this early stage, applicants may use impression management to manipulate the information presented in their résumés and cover letters announcing job candidacy (Liden & Mitchell, 1989). Impression management during actual interviews may further influence the interviewers' information processing, either positively (Fletcher, 1989; Gilmore & Ferris, 1989) or negatively (Baron, 1989).

Although initial impressions may be formed before the first day a supervisor and subordinate work together, we suspect that in most cases, supervisors continue to engage in a controlled processing mode when observing new subordinates' behavior on the job for the first time (Feldman, 1981). In most cases, assimilation of a new subordinate should be sufficiently unique to trigger a controlled categorization process² (Dienesch & Liden, 1986). Supervisors who have categorized a new subordinate as, for example, lazy may interpret the subordinate's use of impression management behaviors (such as doing favors) as schema-inconsistent information. This interpretation may in turn trigger an episode of controlled information processing (Fiske, Neuberg, Beattie, & Milberg, 1987; Srull & Wyer, 1989). Using this new positive information, the supervisor may revise the initial categorization of the subordinate.

Because such controlled processing involves making attributions for the new subordinates' behavior (Feldman, 1981; Green & Mitchell, 1979), the supervisors become vulnerable to subordinate impression management strategies designed to manipulate their attributions (Jones & Wortman, 1973). For example, in part on the basis of the subordinates' impression management behavior, the supervisors may categorize the new employees as

category. Retrieval occurs at a later time when information is accessed from memory and used in forming judgments, such as performance ratings.

² Controlled processing of information involves conscious thought in the interpretation and encoding of information into memory. Unlike the processing of routine information or stimuli that is handled automatically, controlled processes are invoked when individuals are confronted with novel stimuli or information that is inconsistent with existing schema.

friendly, hard-working, and similar to themselves. This categorization may compare favorably with the supervisors' prototype of ideal subordinate behaviors. A match between prototype and processed information based on the subordinates' impression management may positively influence the task assignments, feedback, resources, and support the supervisors provide to the subordinates. This favorable treatment may cause the subordinates' actual performance to be higher than that of others, and rating biases may also occur (Feldman, 1986; Ilgen & Feldman, 1983).

Supervisor-Focused Impression Management

Greenwald (1980) and Steele (1988) argued that people strive to affirm their self-concepts. They may accomplish this goal through the use of impression management, attempting to control or manage the impressions that other people form so that those impressions are consistent with their desired self-images (Schlenker & Leary, 1982). Often exerting such control translates into an attempt to behave in a way that will result in liking by a target. Research evidence shows that other-enhancement is often effective in provoking a favorable target impression. Jones and Wortman noted that "people find it hard not to like those who think highly of them" (1973: 4).

Because of our focus on subordinates' use of impression management in attempts to influence their immediate superiors, we refer to other-enhancement tactics as supervisor-focused impression management strategies. These include such strategies as flattery, which involves a subordinate's communicating feelings of liking and admiration to a supervisor, and doing favors for the supervisor. A supervisor who feels liked and admired by a subordinate will be more attracted to that subordinate. In fact, a target's attraction to and liking of an agent has been the dependent variable in the majority of the social psychology experiments on impression management. In nearly all those studies, researchers found agent use of flattery and favors to be related to target affect for and attraction to the agent (Jones, 1964; Jones & Wortman, 1973; Schlenker, 1980; Wortman & Linsenmeier, 1977). The handful of studies specifically designed to assess the use of other-enhancement in organizational situations has revealed similar results. For example, subordinate use of supervisor-focused impression management has been found to be related to supervisors' attraction to subordinates (Kipnis & Vanderveer, 1971) and liking of the subordinates (Wayne & Ferris, 1990).

Hypothesis 1a: A subordinate's use of supervisor-focused impression management behaviors will have a positive effect on his or her supervisor's liking of the subordinate.

In an effort to maintain positive self-images, individuals may be especially attentive to positive things that are said about them and to favors done for them (cf. Markus, 1980). According to self-verification theory, people tend to be attracted to and to identify with those who confirm the perceptions they have of themselves (Swann, Stein-Seroussi, & Giesler, 1992). In-

dividuals tend to perceive themselves as similar to those who display attractive behaviors, such as giving compliments (Byrne, 1971; Lewicki, 1983). It follows that supervisors will see themselves as being more similar to subordinates who compliment them and do favors for them than to subordinates who do not engage in these behaviors.

Hypothesis 1b: A subordinate's use of supervisor-focused impression management behaviors will have a positive effect on his or her supervisor's perceptions of similarity to the subordinate.

Self-Focused Impression Management

There are many assertive self-presentation strategies, including false modesty, boasting, and a host of nonverbal behaviors such as smiling, making eye contact, and touching (Cialdini, 1989; Ralston & Elsass, 1989; Schlenker, 1980; Tedeschi & Melburg, 1984; Tedeschi & Norman, 1985). We measured self-presentation in terms of two strategies, self-enhancement and exemplification, or acting as an exemplar. We refer to these strategies as self-focused impression management. With these strategies, a subordinate attempts to convey the impression that he or she is a friendly, hard-working, model employee.

A subordinate's goal with these self-focused strategies is to create an image that a supervisor will perceive favorably. An agent must be willing to assume risk when using self-focused strategies (Liden & Mitchell, 1988) because the influence attempt will backfire if the target interprets the self-presentation as insincere (Wortman & Linsenmeier, 1977). Subordinates who are consumed by presenting themselves favorably may fail to devote enough effort to job duties (Baumeister, 1989), which results in negative supervisor reactions. As Cialdini and DeNicholas wrote, "If there is an overarching lesson to be learned from the large body of work on impression management, it is that favorable self-presentation is a tricky business" (1989: 626). Research results indicate that agents often do not succeed in the use of self-focused strategies, as is evidenced by neutral (Wayne & Ferris, 1990) or negative (Baron, 1986; Powers & Zuroff, 1988) target reactions. For example, in Powers and Zuroff's research, agents who used self-focused impression management were less liked than were individuals who did not use impression management. Given the extreme skill that appears to be needed in the use of self-focused impression management tactics, we expect that most subordinates will not succeed in conveying a positive image with such tactics.

Hypothesis 2a: A subordinate's self-focused impression management behaviors will have a negative effect on his or her supervisor's liking of the subordinate.

A very consistent finding in the social psychology and organizational literatures is the strong association between perceived similarity and liking. It follows that if supervisors do not like subordinates who promote them-

selves, the supervisors will not perceive themselves as similar to the self-promoting subordinates. Psychologically healthy individuals tend not to identify with or perceive themselves as similar to those they consider undesirable (Byrne, 1971; cf. Cialdini & DeNicholas, 1989; Lewicki, 1983; Swann et al., 1992).

Hypothesis 2b: A subordinate's self-focused impression management behaviors will have a negative effect on his or her supervisor's perceptions of similarity to the subordinate.

Demographic Similarity

A recent extension to the study of demography and individual differences has involved examining similarity between individuals at both dyadic and group levels. This new approach, termed relational demography, relies on the similarity-attraction paradigm (Byrne, 1971) for its theoretical foundation. According to this theory, individuals who possess similar individual characteristics and attitudes will perceive one another as similar and will be attracted to each other. Experiments in social psychology have provided support for the theory (Berscheid & Walster, 1969; Byrne, 1971; Jamieson, Lydon, & Zanna, 1987). Field research in organizational settings has demonstrated effects that explain variance in dependent variables beyond that explained by main effects for individual differences. For example, demographic similarity between supervisor and subordinate has been found to be positively related to a supervisor's liking of a subordinate (Judge & Ferris, 1993; Tsui & O'Reilly, 1989) and negatively related to role ambiguity (Tsui & O'Reilly, 1989).

Hypothesis 3a: Demographic similarity between a supervisor and a subordinate will have a positive effect on the supervisor's liking of the subordinate.

Hypothesis 3b: Demographic similarity between a supervisor and a subordinate will have a positive effect on the supervisor's perceptions of his or her similarity to the subordinate.

Supervisor Liking and Ratings of Subordinate Performance

Zajonc (1980) argued for the primacy of affect, suggesting that it dominates interactions between people. An especially important interpersonal interaction in organizations is that between subordinate and supervisor. Empirical support has been found for Liden and Mitchell's (1989) proposition that affect plays a critical role in the type of exchange that develops between supervisor and subordinate (Liden, Wayne, & Stilwell, 1993; Wayne & Ferris, 1990). One implication of the importance of affect in subordinate-supervisor interactions is that it may cause bias in a supervisor's treatment (Feldman,

1986) and evaluation of subordinates (Dipboye, 1985; Villanova & Bernardino, 1989).

Responding to calls by Landy and Farr (1980) and Mitchell (1983) for research on the social context of performance ratings, researchers have conducted studies in which they found social factors to be related to performance ratings (e.g., Mitchell & Liden, 1982). Specifically, a supervisor's liking of a subordinate has been shown to be positively related to supervisory performance ratings (Judge & Ferris, 1993; Tsui & Barry, 1986; Wayne & Ferris, 1990). These studies are also important because they were among the first to integrate cognitive information processing with the social context of performance rating (cf. Schneider, 1991). However, the research reported in each of these studies was either conducted in a laboratory or in the field, with a cross-sectional design. Thus, common method variance is a concern because supervisors assessed their liking for and the performance of the subordinates at the same time. And even if common method variance did not influence the results, it is not known if liking at one time influences ratings made later.

Although the research that has appeared on the association between liking and performance appraisal has been cross-sectional, theory supports the argument that liking will have an enduring effect that will influence later performance ratings. French and Raven (1959) described being liked as "referent power" that provides the liked individual with influence. Tedeschi and Melburg noted that "on a long term basis there are many potential gains for the liked person" (1984: 45), including better communication, trust, and ability to influence. Specifically, liking may influence supervisors' observation and storage of information over time as well as their recall at the time they actually rate a subordinate's performance (Cardy & Dobbins, 1986; De-Nisi & Williams, 1988; Srull & Wyer, 1989). Supervisory liking of a subordinate may reflect job behaviors associated with good job performance, such as the subordinate's friendliness toward customers and working well with other employees (Ashforth & Humphrey, 1993). However, liking may also mask performance deficiencies and lead to biased performance ratings. At least three biases resulting from liking or disliking a subordinate may influence a supervisor's performance ratings. First, the supervisor may provide liked subordinates with more resources and support than disliked subordinates, which may influence actual performance (Feldman, 1986). Second, supervisors may be selectively attentive to subordinates' work behaviors over time, noticing and storing information concerning the positive work behaviors of liked subordinates and the negative work behaviors of disliked subordinates. Finally, when actually rating subordinates, supervisors will tend to recall the positive work behaviors of liked subordinates and the negative work behaviors of disliked subordinates.

Hypothesis 4: A supervisor's liking of a subordinate will be positively related to the supervisor's ratings of the subordinate's performance.

Supervisor Perceptions of Similarity and Ratings of Subordinate Performance

Perceived similarity has also been shown to have a direct effect on performance ratings (Pulakos & Wexley, 1983; Senger, 1971; Turban & Jones, 1988; Wexley, Alexander, Greenwalt, & Couch, 1980; Zalesny & Highhouse, 1992; Zalesny & Kirsch, 1989). Zalesny and Highhouse suggested that research in social cognitive information processing might explain correlations between perceived similarity and performance ratings. Specifically, substantial support has been found for the idea that people develop self-schemata for organizing perceptions of themselves (Markus, Smith, & Moreland, 1985; Srull & Gaelick, 1983). Research findings of self-serving attributional biases (Ross, 1977) and tendencies to protect self-image (Schlenker, 1980; Steele, 1988; Swann, 1982) imply that most people evaluate themselves positively (DeNisi & Shaw, 1977; Shore, Shore, & Thornton, 1992). These findings also suggest that supervisors' self-schemata should approximate the prototypes of desired characteristics and behaviors they use in the process of rating performance. Thus, a supervisor, comparing his or her self-schema with information remembered about a similar subordinate, should rate that subordinate more positively than a dissimilar subordinate (Lewicki, 1983).

Hypothesis 5: A supervisor's perceptions of similarity to a subordinate will be positively related to the supervisor's ratings of the subordinate's performance.

Long-Term Effects of Impression Management

To our knowledge, researchers have not used longitudinal research designs in the investigation of impression management and its effects on performance ratings. It is not clear if the results found in previous cross-sectional research will also be found in longitudinal studies. However, drawing on a cognitive information processing model, we predict that impression management will influence later performance ratings.

METHODS

Respondents

The study was conducted at two major universities located in the Midwest and Southeast. We collected complete data from 111 pairs of subordinates and their immediate supervisors. The respondents held a wide range of nonacademic positions, such as that of secretary, electrician, librarian, admissions counselor, research scientist, and computer programmer. The average age of the subordinates was 33 and the average age of the supervisors was 41. The subordinate group included 47 men and 64 women, and the supervisor group included 51 men and 60 women. Of the subordinates, 73 were Caucasian, 27 were African-American, and 11 indicated they were of another race. Of the supervisors, 98 were Caucasian, 8 were African-American, and 5 marked "other." The average educational levels were an

associate's degree for the subordinates and a bachelor's degree for the supervisors. Supervisors had held their positions for an average five years.

Procedures

Recently hired subordinates at both sites were required to attend a one-day orientation session. The orientation sessions were held biweekly with small groups of new subordinates. Over a one-year period, a member of our research team at each location attended every orientation session in order to describe the study and to elicit participation. It was necessary to attend orientation sessions over an entire year because of the fairly low number of new hires at any single session. Over the course of the entire data collection period, approximately 35 percent of all individuals attending orientation sessions at one site and about 70 percent of all attendees at the other site agreed to participate in the study. These percentages should be interpreted as the lower bounds for response rates as many individuals did not participate because they were not eligible. For example, employees who held academic appointments, had worked with the supervisors previously, or had worked with their supervisors for more than 28 days were not eligible for the study. The personnel directors at both sites also informed us that some of the new employees attending orientation sessions were illiterate or functionally illiterate. For ethical reasons, we did not attempt to identify employees who were eligible for the study but who elected not to participate. Thus, 35 and 70 percent are conservative estimates of the response rates. The difference in the response rates at the two sites resulted from one of the organizations having a large temporary work program. Thus, many orientation attendees were ineligible for the study because they had been working with their supervisors as temporary employees.

The measures from which the data used in this study are drawn were part of a larger organizational survey of supervisor-subordinate relationships (Liden et al., 1993). We intended to have all respondents complete four surveys at the following times: within five days of starting employment, after two weeks, after six weeks, and after six months. The demographic items were included in the initial survey. Although the personnel departments at both sites encouraged all new employees to attend the orientation within the first five days of their employment, many employees worked with their supervisors for a couple of weeks before attending the session. As a result, we modified the study so that new employees who had been working with their supervisors for more than five days completed the two-week, six-week, and six-month surveys. For these respondents, the demographic items were included in the two-week survey.

New employees who agreed to participate completed either three or four surveys, depending on how many days it had been since they first started working with their new supervisors. Those who said it had been five days or less completed the zero-to-five-day questionnaire immediately. They received another three questionnaires via campus mail after two weeks, six weeks, and six months from their hiring date. Employees volunteering to

participate in the study who indicated that it had been between 6 and 28 days since they started working with their new supervisors were provided with the two-week survey and asked to complete it immediately and return it by mail to us. They received the six-week and six-month surveys through campus mail. Except for the variation noted in regard to demographic items, all subordinates completed the same surveys after two weeks, six weeks, and six months from their hiring dates.

We asked all respondents for their direct supervisors' phone numbers and contacted the latter immediately after the orientation to ask them to participate in the study. A supervisor who agreed to participate completed either three or four surveys, depending on how many days it had been since the focal subordinate first started working with the supervisor. Again, the demographic items were included either in the zero-to-five-day survey or in the two-week survey. Except in regard to the demographic items, all supervisors completed the same surveys after two weeks, six weeks, and six months from the subordinate's hiring date.

As in any longitudinal study, it was necessary to identify respondents so that responses at each time could be compared. Identification was also necessary for matching supervisor and subordinate responses. A code number on each questionnaire served this purpose. We told all employees that their responses would be held in strict confidence and provided envelopes in which they were to return the surveys by mail.

Given the longitudinal design, some subject mortality occurred during the study. A total of 160 supervisor-subordinate dyads completed the two-week survey; 149 of these completed the six-week survey; and 111 dyads completed all three surveys. All analyses are based on the 111 supervisor-subordinate dyads.

Measures

Subordinates reported their impression management behavior in the two-week and six-week surveys. Supervisors also reported their subordinates' impression management behavior at those points. Supervisors completed measures of perceived similarity and liking of the subordinate in the six-week survey and evaluated their subordinate's performance at six months.

Subordinate impression management behavior. Wayne and Ferris (1990) developed a 24-item scale to measure a number of assertive impression management behaviors, including self-enhancement, other-enhancement, opinion conformity, favor-doing, and exemplification. Results of their principal components analysis indicated three types of impression management: job-focused, supervisor-focused, and self-focused. The reliabilities for these scales in their study were .87 for job-focused, .78 for supervisor-focused, and .71 for self-focused impression management. We used a shortened version of the 24-item Wayne and Ferris scale to assess impression management behavior, assessing two of the three types of tactics, supervisor-focused and self-focused impression management. Subordinates

reported how often during the past six weeks they had engaged in 12 impression management behaviors on a seven-point scale (never, 1, to always, 7). Using the same response scale, supervisors also reported how often their subordinates had engaged in the 12 impression management behaviors during the past six weeks.

Demographic similarity. Drawing on research by Turban and Jones (1988), we created a measure of demographic similarity including gender, race, and age. Educational level was not included because some data for this variable were missing. Respondents indicated their race as white, African-American, or other. For the other category, respondents were asked to specify their race. Subordinates and supervisors who both checked the other category but did not specify their race were not included in the analyses because we could not determine similarity in terms of race. Gender and race were coded as the same (0) or as different (1). Age was measured in years. Age discrepancy was the absolute difference between supervisors and subordinates. We divided the discrepancy values by their respective standard deviations, summed them, and then reverse-scored them so that the larger the score, the greater the demographic similarity.

Supervisor liking. Three items were used to measure liking. Two items, developed by Wayne and Ferris (1990), were: "I like my subordinate very much as a person" and "I think my subordinate would make a good friend." Each item was scaled from "strongly disagree," 1, to "strongly agree," 7. For the third item, developed for this study, the following instructions were provided: "Liking refers to the mutual affection the supervisor and subordinate have for each other. Please rate each of your subordinates on the degree to which you like each other" (1 = dislike each other very much, 4 = indifferent about each other, 7 = like each other very much). The response scale was designed in such a way that a supervisor's response on the liking item for a new subordinate could be identified from among the responses concerning his or her other subordinates. We summed ratings on the three items to create the liking measure ($\alpha = .79$).

Supervisor perceptions of similarity. We used three items developed by Turban and Jones (1988) to measure perceived similarity: "My subordinate and I are similar in terms of our outlook, perspective, and values," "My subordinate and I see things in much the same way," and "My subordinate and I are alike in a number of areas." Supervisors responded on a seven-point scale ranging from "strongly disagree" to "strongly agree." The items were summed to create the measure ($\alpha = .89$).

Performance ratings. We developed the following four items: (1) "This subordinate is superior (so far) to other new subordinates that I've supervised before," (strongly disagree to strongly agree), (2) "Rate the overall level of performance that you observe for this subordinate" (unacceptable, poor, below average, average, above average, excellent, and outstanding), (3) "What is your personal view of your subordinate in terms of his or her overall effectiveness?" (very ineffective to very effective), (4) "Overall, to what extent do you feel your subordinate has been effectively fulfilling his

or her roles and responsibilities?" (not effectively at all to very effectively). In addition, we used three items developed by Tsui (1984) that measure the extent to which a supervisor feels a subordinate is meeting the demands of his or her roles. Responses for all seven items were made on seven-point scales and were summed ($\alpha = .94$).

RESULTS

Because data were collected at two organizations, we examined differences between the sites on all variables. A moderated hierarchical regression analysis was conducted with site entered first, followed by the independent variables and the interactions between site and each independent variable. The results revealed no significant main effect for site and no significant interaction terms. Therefore, we merged data from the two organizations for all analyses.

Before testing the proposed model, we conducted a series of principal components analyses with the variables of interest. First, principal components analysis with varimax rotation was used to examine the 12-item impression management scale administered to the subordinates and supervisors at two weeks. The resulting factor structures were ambiguous and unreliable, perhaps because employees had not had an adequate opportunity to engage in impression management behaviors. Thus, impression management behavior at two weeks was not included in this study.

We examined the factor structure of the 12-item impression management scale completed by subordinates at six weeks by conducting a principal components analysis with varimax rotation. First, a three-factor solution was examined. Three factors emerged with eigenvalues greater than 1.0; however, only one item loaded above .40 on factor 3. Because these results did not support a three-factor solution and because prior research has found support for a two-factor solution (Wayne & Ferris, 1990), we conducted a principal components analysis in which we set the number of factors to two. One item with a cross-loading and a second item that did not load above .40 on either factor were omitted. Analysis of the remaining ten items yielded two eigenvalues greater than 1.0 (2.94 for factor 1 and 2.30 for factor 2), and the factors explained 52.4 percent of the variance. The Cronbach alpha estimate for the supervisor-focused impression management scale (factor 1) was .78, and for the self-focused impression management scale (factor 2), it was .71. As Table 1 shows, the factor matrix indicated that all items loaded on the intended factors and had acceptable loadings. Because subordinates may have responded in a socially desirable way to the impression management items, we included the Crowne-Marlowe measure of social desirability (Crowne & Marlowe, 1960) in the initial subordinate survey (zero-to-five days). Forty-three subordinates completed this survey. The social desirability scale, which had a Cronbach alpha estimate of .84, was not significantly correlated with supervisor-focused impression management ($r = .13$, n.s.) nor self-focused impression management ($r = .06$, n.s.). These results sug-

gest that subordinates did not respond in a socially desirable way to the impression management items.

The factor structure of the supervisor reports of subordinate impression management (ten items) measured at six weeks was also examined with principal components analysis with varimax rotation and the number of factors set to two. The factor structure was consistent with the results for the factor structure based on subordinates' reports. The correlations between supervisor and subordinate reports of impression management were significant for supervisor-focused impression management ($r = .51$, $p < .001$) and nonsignificant for self-focused impression management ($r = .08$, n.s.). We did not include supervisor reports of impression management in the analyses for three reasons: the number of observations would have been reduced because of missing data; common method problems may have arisen because liking, perceived similarity, and performance ratings were assessed from the supervisor's perspective; and supervisors may have been unaware of impression management behaviors when subordinates engaged in those behaviors effectively.

A principal components analysis with varimax rotation was also conducted for the supervisor responses to the perceived similarity, liking, and performance rating items. The number of factors was set to three. The eigenvalues were 6.76 for factor 1 (performance), 2.41 for factor 2 (perceived similarity), and 1.01 for factor 3 (liking). A total of 78.3 percent of the vari-

TABLE 1
Rotated Factors and Loadings for the Impression Management Items^a

Items	Factor 1	Factor 2
To what extent do you		
1. Do personal favors for your supervisor (for example, getting him or her a cup of coffee or a coke, etc.)	.83	-.02
2. Offer to do something for your supervisor which you were not required to do; that is, you did it as a personal favor for him or her	.76	.08
3. Compliment your immediate supervisor on his or her dress or appearance	.73	.13
4. Praise your immediate supervisor on his or her accomplishments	.65	.14
5. Take an interest in your supervisor's personal life	.62	-.06
6. Try to be polite when interacting with your supervisor	-.13	.83
7. Try to be a friendly person when interacting with your supervisor	-.17	.74
8. Try to act as a "model" employee by, for example, never taking longer than the established time for lunch	.20	.72
9. Work hard when you know the results will be seen by your supervisor	.13	.60
10. Let your supervisor know that you try to do a good job in your work	.20	.59

^a N = 111.

ance was explained. The results, shown in Table 2, indicated that all the items loaded on the intended factors and had acceptable loadings.

Table 3 gives means, standard deviations, and correlations among the variables. The subordinates' reports of supervisor-focused impression management behavior were positively related to the supervisors' liking of the subordinates and perceptions of similarity. Demographic similarity was also positively related to the supervisors' liking and perceptions of similarity. Supervisors' liking of subordinates was strongly and positively correlated with perceptions of similarity. Further, supervisors' liking of the subordinates and perceptions of similarity measured at six weeks were positively related to supervisors' ratings of the subordinates' performance measured at six months.

Structural Equations Modeling

To test the hypothesized model presented in Figure 1, we used structural equations modeling, taking this approach because the model specifies causality rather than mere empirical association. In addition, structural equations modeling allows the correction of structural estimates for mea-

TABLE 2
Rotated Factors and Loadings for Performance, Perceived Similarity, and Liking Items^a

Items	Factors		
	1	2	3
1. Overall, to what extent do you feel your subordinate is performing his or her job the way you would like it to be performed?	.92	.06	.11
2. To what extent has your subordinate's performance met your own expectations?	.90	.05	.14
3. Overall, to what extent do you feel your subordinate has been effectively fulfilling his or her roles and responsibilities?	.90	.14	.21
4. Rate the overall level of performance that you observe for this subordinate	.87	.24	.16
5. This subordinate is superior (after 6 months) to other new subordinates that I've supervised before	.83	.14	.14
6. What is your personal view of your subordinate in terms of his or her overall effectiveness?	.82	.20	.29
7. If you entirely had your way, to what extent would you change the manner in which your subordinate is doing his or her job?	.75	.29	-.11
8. My subordinate and I are similar in terms of our outlook, perspective, and values	.13	.87	.24
9. My subordinate and I are alike in a number of areas	.16	.83	.32
10. My subordinate and I see things in much the same way	.30	.82	.22
11. I like my subordinate very much as a person	.12	.21	.88
12. I think my subordinate would make a good friend	.19	.23	.80
13. Please rate your subordinate on the degree to which you like each other	.14	.40	.81

* N = 111.

TABLE 3
Descriptive Statistics and Correlations^a

Variables	Means	s.d.	1	2	3	4	5
1. Subordinate's supervisor-focused impression management behavior	2.97	1.08					
2. Subordinate's self-focused impression management behavior	5.53	0.88	.16				
3. Demographic similarity	5.53	1.79	.11	.06			
4. Supervisor's liking of the subordinate	5.39	0.97	.34***	.07	.31**		
5. Supervisor's perceptions of similarity	4.84	0.97	.28**	-.09	.31**	.59***	
6. Supervisor's ratings of the subordinate's performance	5.59	1.04	.18	.01	.17	.36***	.42***

^a N = 111.

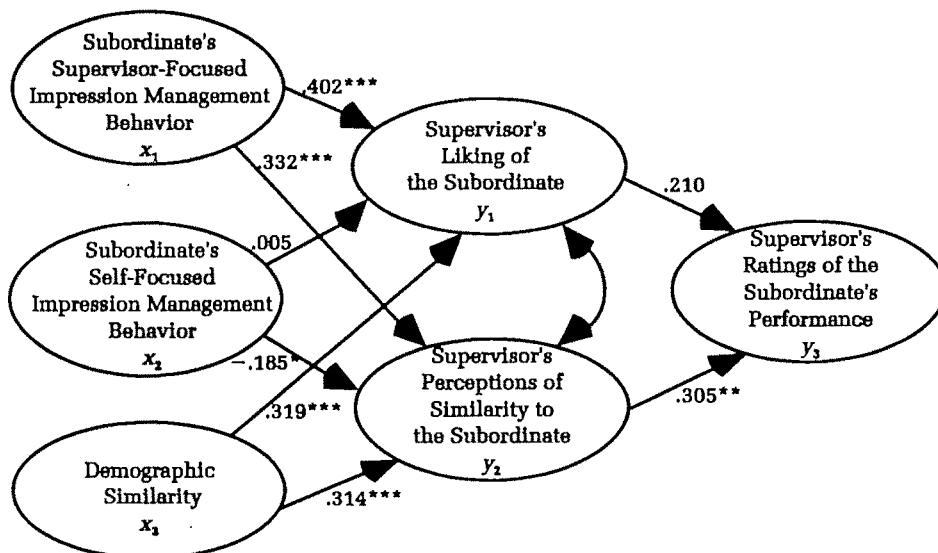
* p < .05

** p < .01

surement error. Finally, structural equations modeling can be used to examine the overall fit of a model and to examine alternative models (Jöreskog & Sörbom, 1989). Scale values for each variable were calculated and the covariance matrix was used as input to LISREL 8.03 (Jöreskog & Sörbom, 1993). To adjust for measurement error in the scale values, we set the path from the latent variable to the indicator equal to the square root of the scale reliability. The error variance was set equal to the variance of the scale value multiplied by 1.0 minus the reliability (Jöreskog & Sörbom, 1989; Williams & Hazer, 1986). The reliability of the demographic similarity variable was estimated at .95 (Hayduk, 1987).

Figure 2 presents the maximum likelihood parameter estimates of the proposed model. Because supervisor liking of a subordinate and perceived similarity were both measured at the same time (six weeks), causality could not be determined. Thus, the model depicts the relationship between liking and perceived similarity as noncausal. Six of the eight predicted links were statistically significant. Hypothesis 1a was supported; the parameter estimate for the relationship between supervisor-focused impression management behavior and supervisor liking of a subordinate was significant. However, Hypothesis 2a was not supported; self-focused impression management was not significantly related to a supervisor's liking a subordinate. The significant parameter estimate for the relationship between supervisor-focused impression management behavior and supervisor's perceptions of similarity indicated support for Hypothesis 1b. For the relationship between self-focused impression management behavior and supervisor's perceptions of similarity, the parameter estimate was negative and significant, providing

FIGURE 2
Structural Estimates of the Hypothesized Model^a



* Standardized path coefficients; $N = 111$.

* $p < .05$, one-tailed test

** $p < .01$, one-tailed test

*** $p < .001$, one-tailed test

support for Hypothesis 2b. Findings also supported Hypotheses 3a and 3b; demographic similarity was significantly related to a supervisor's liking a subordinate and to perceptions of similarity. In terms of the predictors of performance ratings, the parameter estimate for the path linking a supervisor's liking a subordinate to performance ratings was not significant. However, the parameter estimate was significant for the link between perceptions of similarity and performance ratings. Thus, Hypothesis 4 was not supported and Hypothesis 5 was supported. In addition, a subordinate's report of supervisor-focused impression management behavior exerted a significant, indirect effect on the supervisor's ratings of the subordinate's performance ($t = 3.02$, $p < .01$) via perceptions of similarity. Demographic similarity also had a significant, indirect effect on performance ratings through perceptions of similarity ($t = 3.06$, $p < .01$).

The results for the overall model (model 2, Table 4) indicate that the data fit the proposed model very well. Results were as follows: chi-square, with 6 degrees of freedom, 4.46 ($p = .615$); goodness-of-fit (GFI) index, .986; adjusted goodness-of-fit index (AGFI), .952; and root-mean-square residual (RMSR), .066. The R^2 for the ratings of the subordinate's performance was .23.

The overall fit indexes for the proposed model were compared to those

TABLE 4
Results of the LISREL Analyses

Models	df	χ^2	Goodness-of-Fit Index		Adjusted Goodness-of-Fit Index	Root-Mean-Square Residual
			Goodness-of-Fit Index	Adjusted Goodness-of-Fit Index		
1	14	60.08***	.839	.759	.252	
2	8	4.46	.986	.952	.066	
3	9	11.90	.964	.917	.074	

* $p < .05$

** $p < .01$

*** $p < .001$

of a null model (model 1) in which no relationships among the variables are posited. The results for this model were chi-square, with 14 degrees of freedom, 60.08 ($p < .001$); GFI, .839; AGFI, .759; and RMSR, .252. The change in chi-square between models 1 and 2 was 55.62, with 8 degrees of freedom, a significant change ($p < .001$). These results indicate that the proposed model is superior to the null model specifying no causal paths among the variables.

It may be that the two impression management behaviors and demographic similarity directly influence perceptions of similarity, which in turn influence liking. Further, liking a subordinate may have a direct impact on ratings of the subordinate's performance. We examined this alternative model, in which the causal path from perceptions of similarity to ratings of the subordinate's performance was not included and the impression management behaviors and demographic similarity were not directly linked to liking. The fit indexes for this model, model 3, had lower values than those for the hypothesized model: chi-square, with 9 degrees of freedom, 11.90 ($p = .22$); GFI, .964; AGFI, .917; and RMSR, .074. The change in chi-square between models 2 and 3 was 7.44, with 3 degrees of freedom, a significant value ($p < .05$). These results indicate that the hypothesized model was superior to model 3.

DISCUSSION

Overall, the results of this study provide strong support for the hypothesized model. Demographic similarity and subordinate impression management behavior influenced supervisory performance ratings through their impact on supervisors' perceptions of similarity to subordinates. The fit of the data to the full model and parameters for six of the eight hypothesized links in the model were significant. The current study extends knowledge on impression management by demonstrating that a subordinate's use of impression management early in the relationship with a supervisor induces liking and perceptions of similarity, which in turn influence performance ratings made later. Another addition to current knowledge was the independent effect of demographic similarity on performance ratings through perceived similarity.

Supporting the hypotheses, supervisor-focused impression management was positively related to a supervisor's perceived similarity to a subordinate. Also, as predicted, self-focused impression management was negatively related to perceptions of similarity. The predictions of a negative path between self-focused impression management and liking and of a path between liking and performance ratings were not supported. The results suggest that agents are more successful in the use of other-enhancement (supervisor-focused) strategies than in the use of self-focused strategies. With supervisor-focused impression management, it appears that supervisors do not suspect that subordinates have ulterior motives. In other words, the supervisors may believe and accept positive statements and compliments about themselves made by the subordinates, but not accept positive statements concerning the subordinates' qualities. However, although self-presentation strategies often fail (Cialdini & DeNicholas, 1989), targets may have positive reactions to agents' use of self-presentation (Ashforth & Humphrey, 1993; Schlenker, 1980). Future research is needed to determine what differentiates favorable target reactions to agent self-presentation from unfavorable ones (Baron, 1989; Godfrey, Jones, & Lord, 1986).

Demographic similarity was also found to affect perceived similarity. Supervisors perceived themselves to be more similar to subordinates whose demographic profiles were similar to the supervisors' than to those with dissimilar demographic profiles. Interestingly, the paths between demographic similarity and perceived similarity and between impression management and perceived similarity were both significant. Thus, demographic similarity and subordinate impression management uniquely influence performance ratings through a supervisor's perceptions of similarity to a subordinate.

Although the self-focused impression management behaviors were quite subtle, they resulted in lowering the supervisors' perceptions of their own similarity to subordinates. Despite this effect, these behaviors did not influence supervisor liking. This finding suggests that even when targets do not interpret self-focused impression management as bragging or conceit, they may find such self-promotional behaviors to be boring and tiresome (Leary, Rogers, Canfield, & Coe, 1986). In a controlled laboratory setting, Leary and colleagues (1986) found self-focused impression management led neither to like nor dislike on the part of subjects. An alternative explanation is that when a subordinate uses self-focused tactics, especially those of acting as an exemplar or model employee, supervisors may form expectations that the subordinate does not or cannot live up to over time, causing performance ratings to suffer (Baumeister, 1989). Further research is needed to examine the underlying reasons for the different effects of supervisor-focused and self-focused impression management on supervisory reactions.

As the current model suggests, supervisors' perceptions of their own similarity to subordinates were significantly related to liking the subordinates, a finding that provides support in an organizational setting for Byrne's similarity-attraction hypothesis. Previous research testing this hypothesis

has either been conducted in laboratory experiments or in field studies involving nonorganizational samples, such as teenagers (Kandel, 1978). Organizational researchers have assumed the validity of the similarity-attraction association, but the current results provide the first evidence of generalizability to organizational settings.

Strong support emerged for the predicted effect of supervisor-perceived similarity to a subordinate and ratings of the subordinate's performance. Although substantial evidence for similarity-performance rating effects has accumulated in the organizational literature (Pulakos & Wexley, 1983; Senger, 1971; Turban & Jones, 1988; Wexley et al., 1980; Zalesny & Highhouse, 1992; Zalesny & Kirsch, 1989), our results demonstrate that performance ratings can be predicted from similarity perceptions assessed 20 weeks before performance is rated. In cross-sectional designs, causality cannot be demonstrated, even with LISREL analysis (Jöreskog & Sörbom, 1989); the time separation between the similarity measurement and the performance rating featured in our design supports the plausibility of causality from similarity to performance rating. However, because supervisors may informally evaluate subordinates' performance prior to formally appraising it, there may be a reciprocal interdependence between perceived similarity and performance ratings.

Although prior studies have found strong support for the path between a supervisor's liking a subordinate and the supervisor's ratings of the subordinate's performance, no support for the relationship emerged in the current investigation. One explanation may be that, unlike previous studies, this study measured liking and performance 20 weeks apart, substantially reducing the effect of common method variance occurring when the two are assessed simultaneously. Another explanation is that although liking and perceived similarity were both significantly correlated with performance ratings, perceived similarity dominated liking when tested using LISREL, a multivariate technique. Previous studies demonstrating significant effects for liking on performance ratings (e.g., Judge & Ferris, 1993; Tsui & Barry, 1986) have not included a measure of perceived similarity.

The time-lagged effects are theoretically important because they provide support for the assertion that impression management behaviors have long-term effects. Although we cannot determine whether the respondents in our study consciously or unconsciously engaged in impression management with the intent of influencing future performance ratings, our results are consistent with such an interpretation. Supervisor-focused impression management measured at six weeks had a significant, indirect effect on performance ratings made at six months, but self-focused impression management did not. Impression management's long-term effect on performance ratings provides support for Tedeschi and Melburg's (1984) thesis that impression management can be used strategically to influence future outcomes with important organizational implications. Although short-term tactical impression management behaviors may affect such outcomes as getting the day off, outcomes of lasting importance, such as performance ratings and compen-

sation, are most likely influenced by strategic, not tactical, uses of impression management.

Although not directly tested in the current research, the effect of the long-term outcomes of strategic impression management can be explained with a cognitive information processing approach. Subordinates' supervisor-focused impression management may favorably influence their supervisors' impressions and categorizations of them, and the latter are "encoded into memory." Months later, when the supervisors evaluate the subordinates' performance, the favorable categorization is "retrieved," resulting in a biased rating. Alternatively, the initially favorable categorization may have influenced the supervisors' behavior toward the subordinates in terms of task assignments, feedback, and support so that the subordinates' actual performance is higher than that of others (Feldman, 1986; Ilgen & Feldman, 1983). Studies that include objective measures of performance are needed if researchers are to examine these alternative processes. However, in response to Ilgen, Barnes-Farrell, and McKellin's (1993) call for research on work group and organizational variables that influence supervisors' cognitive information processing, results of the current study suggest that impression management behavior may be an important factor.

Just as supervisors develop categorizations, they may develop expectations about subordinates' performance during the job interview process rather than after working with the subordinates. Thus, supervisor performance expectations and impressions of a subordinate formed during an interview may influence subsequent performance ratings to a greater extent than impression management behavior that occurs on the job.³ Future research integrating the study of employment recruiting and selection with work on the early interactions between supervisors and subordinates is needed. To what extent do impression management and the expectations formed prior to an individual's employment influence the initial work interactions between supervisor and subordinate and performance ratings?

A number of weaknesses of the current study should be acknowledged. One potential weakness is that, as in most longitudinal studies, some subject mortality occurred over the duration of the study. In addition, because supervisors responded to the six-week and six-month surveys, there may have been a testing effect in which the responses at six weeks influenced the subsequent responses. Also, although not a problem for the model as a whole, common method bias may have influenced the reported correlation between supervisors' liking of and perceived similarity to the subordinates as both were measured from the supervisors' point of view at six weeks. Another limitation is that we examined only two impression management tactics, and use of both tactics was reported by the same source, the subordi-

³ Data collected on a small portion of the study group (40 dyads) shed light on this issue. Supervisors' expectations of the subordinates' performance assessed within five days of the start of the working relationship were not significantly correlated with performance ratings at six months ($r = .02$, n.s.).

nates. The subordinates' report of impression management was considered preferable to the supervisors' report because supervisors may not detect successful use of impression management. Additional sources that might be used in future research to assess impression management include independent observers and co-workers.

A problem with existing, cross-sectional impression management research is that the history of subordinates' prior behavior, from well before data are collected, may influence supervisor reactions to subordinate use of impression management (cf. Green, Fairhurst, & Snavely, 1986). The current research included only newly formed supervisor-subordinate dyads, thus controlling for potential history effects. Another strength of the current investigation was the reduction of the common method variance explanations that have been characteristic of some impression management studies. It is possible that when all data are collected from the same source, mood or response tendencies may influence relations between variables (Mitchell, 1985; Schmitt & Klimoski, 1991; Wagner & Gooding, 1987). In the current investigation, impression management was measured from the agent's (subordinate's) perspective and reactions to impression management were assessed from the target's (supervisor's) perspective. In addition to having advantages inherent in longitudinal designs, this study was unique for its examination of the intervening processes involved in the link between impression management behavior and performance ratings.

Suggestions for future research include examining the relative impacts of subordinate impression management behavior and performance-related behavior on performance ratings and outcomes such as pay and promotion decisions. For example, to what extent can supervisor-focused impression management compensate for unsatisfactory performance? This question may be difficult to examine because the objective performance measures used in a given setting are problematic or nonexistent, as was the case in the current investigation. Independent raters should be employed in lieu of, or in addition, to objective measures.

The performance appraisal literature would also benefit from research integrating a full range of social context variables with the cognitive processes of supervisors in observing, storing, and recalling data about subordinates. How does impression management and degree of demographic similarity affect a supervisor's cognitive processing of information? How do situational variables such as organizational level, work group size, technology, and task interdependence influence the processing of information as altered by impression management behavior?

Additional longitudinal studies on impression management are needed so that its uses can be more fully understood. A substantial body of research on the short-term tactical use of impression management has accumulated, but long-term strategic uses have been virtually ignored. One question that needs to be addressed is whether agents deliberately use strategic impression management in an attempt to influence future outcomes. It would also be useful to examine more time periods than were covered here to determine

how far into the future impression management behaviors can continue to influence outcomes.

In summary, results of the current investigation point to the importance of examining aspects of social contexts, including demographic similarity and impression management behavior, in relation to performance appraisal. Demographic similarity and impression management are topics worthy of additional investigation, given their implications for fairness in performance evaluations and personnel decisions based on these evaluations.

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RESEARCH NOTES

© Academy of Management Journal
1995, Vol. 38, No. 1, 261-271.

ECONOMIC DEPENDENCY ON WORK: A MODERATOR OF THE RELATIONSHIP BETWEEN ORGANIZATIONAL COMMITMENT AND PERFORMANCE

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This study examined the role of employees' financial requirements as a moderator of the relationship between their organizational commitment and performance. Hypotheses were tested on two samples of salespeople from different organizations. The results of hierarchical regression analysis indicated stronger relationships between organizational commitment and performance for those with low financial requirements than for those with high requirements.

Most people would agree that the financial pressures to remain in a job are consequential in influencing employees' attitudes and behavior at work. The financial requirements confronting employees have been shown to moderate the relationships between pay satisfaction and life satisfaction (George & Brief, 1990) and between employees' intentions to leave their organizations and facets of job satisfaction (Doran, Stone, Brief, & George, 1991). Doran and colleagues found that when employees were relatively free of externally imposed pressures to stay on a job—they had low financial requirements—their intentions to leave were more strongly related to their job satisfaction than were those of employees with higher financial requirements. Construing an individual's financial requirements to be the presence or absence of choice in a cognitive dissonance framework (Festinger, 1957), Doran and colleagues (1991) supported the proposition that financial requirements moderate the consistency of workers' attitudes and, possibly, the relationship of work attitudes and job behaviors. Our study expands this line of inquiry by examining the potential moderating effects of financial requirements on the relationships between organizational commitment and performance in one organization and replicating this analysis in another.

We would like to acknowledge the constructive comments of Arthur P. Brief, Ellen Jackofsky, Jennifer George, Robin Pinkley, and two anonymous reviewers on earlier versions of this article. This research was funded by grants from the Edwin L. Cox School of Business and the companies participating in the study.

THEORETICAL BACKGROUND

The Role of Financial Requirements

Financial requirements were defined as the factors that influence people's economic need to work. These are influenced by the financial assets available to an individual both from job-related income and income from other sources. Individuals with additional sources of income, such as working spouses and investments, have lower financial requirements than individuals without additional income. An employee's financial requirements are also influenced by the number of dependents for whom the worker is responsible. Financial requirements should be higher the more people for whom an individual has financial responsibility. Workers with many dependents have been found to identify with their organizations and comply with their work values to a greater extent than employees with few dependents (Gould & Werbel, 1983). George and Brief (1990) found that financial requirements moderated the relationships between pay and life satisfaction and that men who were the sole support of households or who had many dependents were more attuned to the economic attributes of their jobs than those without dependents. We therefore expected employees with high financial requirements to be more committed to their organizations than those with low financial requirements.

In Doran, Stone, Brief, and George (1991), workers who had low financial requirements reported stronger relationships between work attitudes and behaviors than individuals with high financial requirements. Those authors viewed low financial requirements as allowing freedom of choice and high financial requirements as limiting job choices. Employing a cognitive dissonance theory approach, Doran and her colleagues explained how financial requirements might influence workers' attitudes and behaviors. According to this theory (Festinger, 1957), individuals strive to maintain consistency in their attitudes, behavioral intentions, and behaviors by avoiding discrepant cognitions and by altering dissonance-arousing cognitions. Festinger (1957: 91) and Brehm and Cohen (1962) postulated that freedom of choice was necessary for dissonance arousal to occur. Without free choice, an individual does not feel pressure to reduce inconsistent cognitions to maintain balance. As a result, efforts to maintain cognitive consistency between attitudes, behavioral intentions, and behaviors are more likely when people perceive themselves as having choices than when they see few or no choices. When employees' freedom of choice is high—that is, their financial requirements are low—inconsistent cognitions and behaviors create dissonance. Doran and her colleagues (1991) found that when economic freedom of choice was high (financial requirements were low), intentions to leave and general job satisfaction were negatively correlated ($r = -.61$, $p < .001$). However, when employees were economically tied to their jobs because of high financial requirements, the correlation between intentions to leave and general satisfaction was not significant. We expected, therefore, that there would be greater pressure for consistency between attitudes and behaviors

for employees with relatively low financial requirements than for employees with high financial requirements.

Financial Requirements and Organizational Commitment

Mathieu and Zajac (1990) highlighted the need for further research on moderators to clarify the relationships between organizational commitment and employee behavior. Although personal characteristics have been considered antecedents of organizational commitment, the relationship between personal characteristics and commitment has produced small, positive correlations. Those authors suggested that because married employees usually have larger financial burdens than single employees, marital status may moderate relationships between organizational commitment and other attitudes. The results of their meta-analysis (Mathieu & Zajac, 1990) also indicated weak relationships (average $r = .05$) between organizational commitment and output measures of performance. These authors suggested that other variables, such as economic conditions and family obligations, might moderate the relationship between organizational commitment and performance. Although they did not specify the nature of this relationship, they implied that the financial burdens might moderate the employees' commitment to their organizations.

Although the current literature on organizational commitment has focused on differentiating types of organizational commitment and their antecedents and consequences, the present study focused only on attitudinal commitment. Attitudinal commitment is the strength of an employee's emotional attachment to an organization and acceptance of the organization's goals and values. Calculative, or continuance, commitment (Allen & Meyer, 1990; Mathieu & Zajac, 1990; Mowday, Steers, & Porter, 1982) reflects a person's need to work for an organization or investment in it. Financial requirements may be related to and have different consequences for the two facets of commitment. In this research, however, we were interested in financial requirements' moderation of the relationships between attitudinal organizational commitment and behavior.

The purpose of this research was to explore the consequences of workers' financial requirements for their work behaviors and attitudes. Do high financial requirements strengthen or weaken employees' commitments to their organizations and their subsequent performance? This study tested the hypothesis that financial requirements so moderate the organizational commitment—performance relationship that it is weaker for those with high financial requirements than for those with low financial requirements.

METHODS

Respondents and Setting

Data for this research came from geographically dispersed salespeople in two large organizations. The two organizations studied have different industrial classification codes and are pursuing different business strategies

to increase their market shares, but both are U.S. manufacturing companies that sell a number of products to other organizations and serve national markets. One organization is located on the East Coast and the other in the Midwest. Each organization is in a mature industry, although individual product lines may be at different stages of the product life cycle. At the time of the study, the sales force for organization A numbered 233 people; they generated \$273 million in annual sales volume. The firm's market share was 25 percent. Organization B had 261 salespeople, an annual sales volume exceeding \$54 million, and a market share of approximately 15 percent.

Salespeople in both organizations volunteered to participate in this study. A total of 158 salespeople from organization A (a 66 percent response rate) and 180 from organization B responded (a 69 percent response rate). There were no significant demographic differences in age, race, educational level, marital status, sales income, number of dependents under 21, and gender between respondents and nonrespondents in either company, nor were there significant demographic differences between the salespersons in the two organizations. In both companies, 98 percent of the salespeople were men.

Measures

Performance. Actual sales volume taken from company reports was used as the basis for the performance measure. However, we adjusted this figure for territory differences for the salespeople in organization A, who were assigned geographic territories that varied considerably in competitiveness, total sales potential, and demand for particular product lines. The company considered the influence of market share and product growth when evaluating sales performance because it was easier to attain high sales in high growth-high share and low growth-high share markets than in markets with low share. To control for the effect of territory on sales volume, we evaluated product-market growth and relative market share in each territory following Cron and Slocum (1986). Salespeople were asked to indicate their percentages of sales in products that were growing more than 10 percent a year. Salespeople also indicated, for each product growth category, the percentage of sales coming from products in which their company had the highest or second highest market share. On the basis of these two responses, the company constructed a two-by-two matrix similar to the Boston Consulting Group's (1981) growth-share matrix for each territory. Thus, in company A, top management adjusted an individual's sales volume by dummy-coding measures of percentage of sales in low growth-high share, high growth-low share, and high growth-high share product lines to obtain a more accurate performance measure. A salesperson's pay was based on this performance measure. Salespeople in organization B competed with a large number of other organizations with relatively equal market shares. They were not restricted to selling within a specific geographic area and had a large number of potential customers. Actual sales volume from company

reports (without any adjustment for territory characteristics) was the measure of performance.

Organizational commitment. We measured organizational commitment using the 15-item Organizational Commitment Questionnaire (OCQ; Mowday, Steers, & Porter, 1979). This instrument measures the strength of an individual's identification with and involvement in an organization. According to Meyer, Paunonen, Gellatly, Goffin, and Jackson (1990), the OCQ is the most widely used measure of commitment. Reaching a similar conclusion, Mathieu and Zajac (1990) reported an average internal consistency reliability (α) of .88. In the present study, the internal consistency reliabilities were .83 and .81 for companies A and B, respectively.

Financial requirements. We used an additive index adapted from George and Brief (1990) and Doran and colleagues (1991) to measure financial requirements. The index takes into account marital status, spouse's employment status, number of children age 21 and under, percentage of total household income derived from the focal individual's job, and the person's perception of his or her ability to find a job comparable to the one presently held.

Doran and colleagues (1991) and George and Brief (1990) viewed single respondents and married respondents whose spouses worked full-time as having lower financial requirements than respondents whose spouses worked part-time or not at all. The former received a financial requirements rating of 0, the latter a rating of 1.

Following these researchers, we viewed financial requirements as influenced by the number of dependents a worker reports. Gould and Werbel (1983) also argued that the responsibilities of child raising were related to financial burdens and thus heightened security and monetary needs. We assigned a value 1 for each child under 21 and coded respondents without dependent children 0.

If employees have additional sources of income, such as second jobs and rental income, it is also likely that the external pressure to remain on a job will be lower (Ehrenberg & Smith, 1988; Hill, 1987). Thus, we included the percentage of total household income each person derived from his or her job. Since fewer than 1 percent of the respondents reported that less than 25 percent of their total household income derived from their jobs in the focal organizations, we collapsed the first and second quartiles into one category. If workers derived less than 50 percent of their household income from their jobs in the focal organizations, they were given a 1; from 51 to 75 percent, a 2; and more than 76 percent, a 3. Thus, a higher number represented a respondent's greater need to derive income from the employing organization.

Employees with the ability to find other jobs paying similar amounts might perceive themselves to be less financially dependent on their organizations than employees who have little mobility (Bartel, 1979). We thus calculated a mobility index based on a measure developed by Veiga (1981) for each person. A salesperson indicating no chance or a slight chance of

finding another job was coded 1, a 50-50 chance was coded 0, and a better than 50-50 chance was coded -1.

In essence, financial requirements was a relative variable reflecting ratings on five indexes. Summing the responses on the five indexes to attain a financial requirements index resulted in scores ranging from 0 to 7, with high scores indicating greater financial requirements ($\bar{x} = 3.48$, s.d. = 1.21, organization A; $\bar{x} = 3.51$, s.d. = 0.72, organization B). We used Kendall's coefficient of concordance (W) to test the reliability of this index since we had ordinal data (Siegel, 1956: 229-238). The W for the financial requirements index for organization A was .83 ($\chi^2 = 495$, $p < .001$); for organization B, the W was .78 ($\chi^2 = 525$, $p < .001$). Prior research supports the use of this additive index (Doran et al., 1991; George & Brief, 1990).

Evidence for the construct validity of this index was obtained with a two-part questionnaire completed by 53 candidates in an executive master's of business administration program. The first part included the financial requirements index from the current study. Responses were congruent with those of the salespeople in this study ($\bar{x} = 3.47$, s.d. = 1.61). The second part included two open-ended questions: "Briefly tell us about the financial pressures (e.g., rearing children, college costs, home, elderly parents, etc.) you and your family face" and "If you lost your job and received minimal severance, briefly tell us about the potential financial and professional consequences for you and your family." Two coders independently rated responses as representing low, medium, or high financial requirements. The coders had an interrater agreement of .72 based on Cohen's kappa (Hartmann, 1977). A Kruskal-Wallis test (Siegel, 1956) indicated that the additive index and perceptions of financial pressures were related ($\chi^2 = 15.75$, $p < .0004$). This evidence supports the construct validity of the financial requirements index.

RESULTS

Asserting that financial requirements moderate the relationship between performance and organizational commitment, we conducted hierarchical regression analyses (Cohen & Cohen, 1983; Stone & Hollenbeck, 1984) to test main and interactive effects. Commitment scores were entered in the first hierarchical step. Financial requirements were entered second, and the two-way interaction term was entered in the final step. The incremental variance explained by the two-way interaction term was tested for significance.

Table 1 gives means, standard deviations, and correlations for the study variables. Financial requirements moderated the relationship between organizational commitment and performance in both organizations. The relationship between organizational commitment and performance was stronger when financial requirements were low than it was when financial requirements were high. The two-way interaction term (organizational commitment by financial requirements) accounted for a significant portion of the incre-

TABLE 1
Descriptive Statistics and Zero-Order Correlations^a

Variables	Company A		Company B		1	2	3
	Means	s.d.	Means	s.d.			
1. Organizational commitment	76.52	13.79	82.33	11.58		.20	.04
2. Financial requirements	3.48	1.21	3.51	0.72	.13		.15
3. Performance ^b	\$1,145	\$527	\$206	\$148	.08	.11	

^a Correlations for company A are below the diagonal and those for company B are above. For company A, correlations greater than or equal to .15 are significant at $p < .05$ and those greater than or equal to .19 are significant at $p < .01$. For company B, correlations greater than or equal to .16 are significant at $p < .05$, and those greater than or equal to .21 are significant at $p < .01$.

^b Sales volume in thousands.

mental variance in performance in both organizations. Table 2 reports results of these analyses, including the beta weights for the variables entered at the final step and the cumulative explained variance for each scale.

The interaction terms ($\Delta R^2 = .05$ and $\Delta R^2 = .03$, for companies A and B, respectively) indicate a stronger relationship between performance and organizational commitment for individuals with low financial requirements ($b = 13.69$, A, 3.04, B) than for employees with high financial requirements ($b = -5.54$, A, -0.52, B). Figure 1 illustrates the nature of these interactions. The organizational commitment—performance relationship is plotted separately for high and low financial requirements. The high group consisted of individuals with a score of 4 or higher on the financial requirements index and the low group of those with scores of 0 to 3. The data in these figures show that organizational commitment and performance are positively correlated for the low financial requirement employees in both companies.

DISCUSSION

A number of researchers have demonstrated the importance of financial requirements to an individual's work behavior and attitudes. In two different organizations, we found a stronger relationship between performance and organizational commitment for employees with relatively low financial requirements than for employees with high financial requirements. Workers with low financial requirements may experience greater pressure to maintain cognitive balance between their attitudes and behaviors than employees with high financial requirements. Employees with high financial requirements appear to have less pressure to reduce inconsistent cognitions because they have less choice in their relationships with their present employers.

This study adds to the developing literature emphasizing the importance of understanding the economic role of work in the attitudes and behaviors individuals have toward their jobs. These results replicate and expand Doran and her colleagues' (1991) findings that the consistency of work-

TABLE 2
Results of Hierarchical Regression Analysis^a

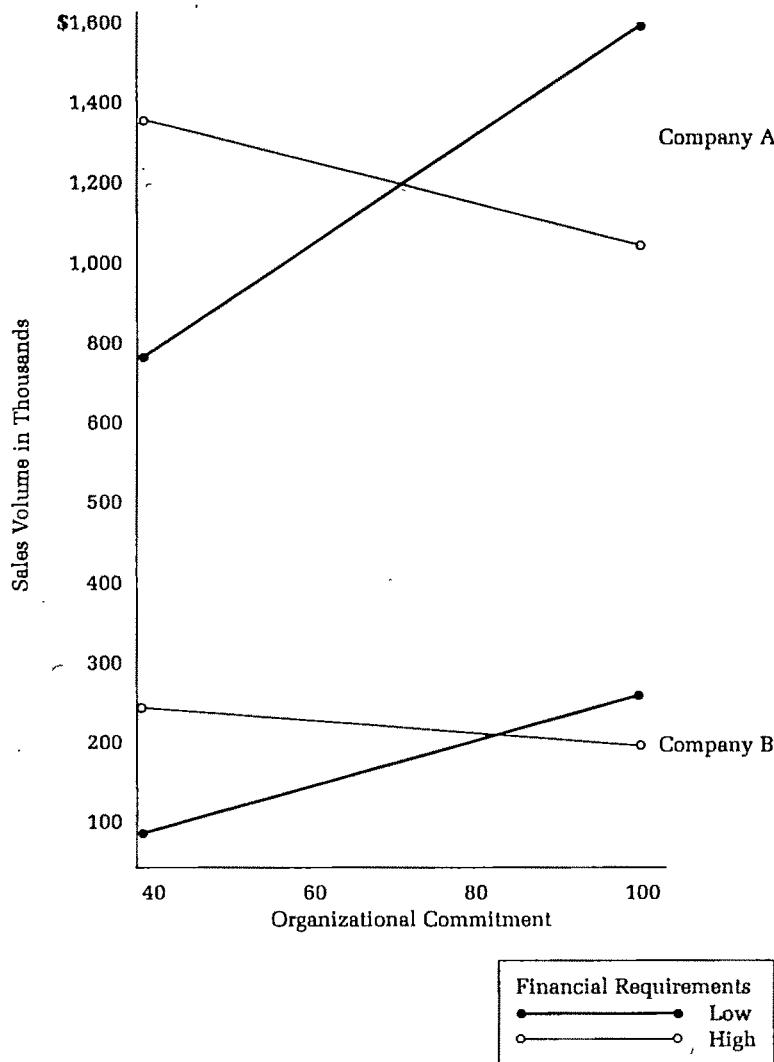
	Step 1			Step 2			Step 3		
	Low Growth- High Share	High Growth- High Share	High Growth- Low Share	Organizational Commitment	Financial Requirements	Financial Requirements × Organizational Commitment	R ²	ΔR ²	
Company A	-2.33 (1.36)	5.08* (2.13)	-7.84** (2.65)	8.91** (3.78)	113.70** (39.69)		.09** .02		
Company B				0.88 (0.99)	0.52** (17.48)	-1.30** (0.40)	.14** .03	.05** .03	

^a Unstandardized regression coefficients are shown, with standard errors in parentheses.

* p < .05

** p < .01

FIGURE 1
Interaction Plots of Organizational Commitment and Job Performance



ers' attitudes and intended behaviors toward their jobs is contingent upon the workers' financial requirements. We have extended this line of inquiry beyond looking at the influence of financial requirements on the relationship between attitudes and intended behavior to examine the influence of financial requirements on the relationship between attitudes and performance. In addition, this research indicates that, counter to the view that financial pressures strengthen an employees' identification with an organization, such pressures may instead create a lack of choice that weakens that

identification. It should be acknowledged that explanations other than dissonance theory may account for the present findings.

This study examined the role of financial requirements as a moderator of the relationship of attitudinal organizational commitment and performance. We acknowledge that the number of indicators of financial requirements used in this study was small. Measures of financial pressures that capture more aspects of this construct, such as medical bills and child or elder care, and change in these aspects over time, need to be developed. In addition, research needs to examine how financial requirements influence the multiple facets of organizational commitment—affectional, calculative (continuance), value, moral, normative, and instrumental. At this time, there is no consensus on these dimensions and how they affect behavior (Jaros, Jermier, Koehler, & Sincich, 1993; Mayer & Schoorman, 1992; O'Reilly, Chatman, & Caldwell, 1991). According to Becker's side bet theory (Allen & Meyer, 1990; Becker, 1960), the more an individual has invested in a company and the lower his or her perceived job mobility, the higher the individual's calculative commitment. Regardless of people's investment in an organization, if they are responsible for many dependents, have few sources of income, and perceive themselves as having low mobility, dependency on their jobs should be high. Further understanding of how financial requirements directly affect the intensity of calculative organizational commitment under these exigencies is warranted.

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COMPETITIVENESS THROUGH MANAGEMENT OF DIVERSITY: EFFECTS ON STOCK PRICE VALUATION

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This study's premise is that firms that can lower their costs and enhance their differentiation through the effective management of their human resources have a competitive advantage. Using data from 1986 through 1992, we examined the impact that announcements of U.S. Department of Labor awards for exemplary affirmative action programs had upon the stock returns of winning corporations and the effect that announcements of damage awards from the settlement of discrimination lawsuits had on the stock returns of corporations. The results suggest that announcements of awards may be associated with competitive advantage and that discrimination-related announcements may be associated with inability to achieve such advantage.

Only human and organizational resources, not physical resources, can provide a firm with a sustained competitive advantage (Barney, 1991; Lado, Boyd, & Wright, 1992). In today's highly competitive global arena, primarily corporations that can lower their costs and enhance their differentiation will have such an advantage (Wright, 1987; Wright, Pringle, & Kroll, 1994). Here, differentiation may be conceived as improvements or innovations that firms offer in their products or services. Attracting and developing superior employees is a prerequisite for both efficiency and differentiation. Such human resources can be associated with high productivity, contribute cost-cutting ideas, have low absenteeism and turnover, and advance differentiation efforts through innovative ideas and superior job performance.

In the past, executives in all firms found similar human resources to manage: the average worker was a white man with a wife and children at home (Jamieson & O'Mara, 1991). More recently, the American work force has become increasingly diverse. Indeed, most workers today are women and nonwhite men (Dreyfuss, 1990; Thomas, 1990), and between now and the end of the century, 85 percent of the net additions to the U.S. work force

will be women and nonwhite men (Cox, Lobel, & McLeod, 1991; Johnston & Packer, 1987).

The trend toward diversity will continue in the next century. In America, the average white woman has 1.7 children, the average black woman, 2.4, and the average Mexican-American woman, 2.9 (Johnston, 1991). Moreover, most of the growth in the work force of the world will be in countries with non-Caucasian populations. The implication is that, as American firms expand their operations abroad, they will face increasingly more diverse human resources to choose from and manage in the global arena.

If competitive advantage is based on human and organizational resources, then the increasing diversity in the work force not only requires embracing this reality, but also changing organizational policies and processes to mesh with the needs of the new work force. Managers and organizations have often failed to fulfill the needs of their diverse employees. In fact, most organizations have not been effective in managing women and nonwhite men. For these groups, turnover and absenteeism are ordinarily higher and job satisfaction levels lower than they are for white men (Cox & Blake, 1991).

For the purpose of our study, we viewed high-quality affirmative action programs as a proxy for the effective management of diverse human resources. As a policy for the promotion of equality of opportunity in the workplace, affirmative action programs can be viewed as a means by which enterprises can benefit from a diverse, multicultural work force and as an enlightened response by top management to a changing labor supply.

Affirmative action is proactive. The Wagner Act of 1935 and Title VII of the Civil Rights Act of 1964 prohibited discrimination in employment based upon race, gender, religion, or national origin. Current voluntary affirmative action initiatives instituted by corporations actively promote the employment of individuals who are members of traditional minority groups when those individuals possess the qualifications necessary for a job. Although the number of minority members and women who hold jobs has dramatically increased over the years, numerous observers have nevertheless suggested that an invisible barrier prevents minorities and women both from being employed and from advancing to challenging positions in business organizations (Cox & Blake, 1991; Cox et al., 1991; Crosby & Blanchard, 1989; DiTomaso, Thompson, & Blake 1986; Greenhaus, 1987; Jamieson & O'Mara, 1991; Morrison, White, & Van Velsor, 1987).

If members of minorities and women have been subject to discrimination, the ethical, moral, and political rationales for quality affirmative action programs may be stronger than the financial rationale for such efforts. In this article, however, we limit our analysis to an examination of the potential economic benefits resulting from strong affirmative action programs. In fact, a contribution of this research is empirical assessment of whether corporations' high-quality voluntary affirmative action programs are associated with their stock price valuations. We considered quality affirmative action programs to be those that have won U.S. Department of Labor awards and

examined the awards' impact on the stock price behavior of the winning firms. Such corporations may be better able to sustain competitive advantage, and they may be valued higher in the market for securities. To strengthen our analysis, we also examined the stock price valuations of firms that announced settlements of lawsuits concerning discrimination. Such firms may be less likely to sustain competitive advantage and consequently, less valued.

It should be emphasized that quality affirmative action plans and programs are a dimension of the management of diversity. Thus, we are not implying that affirmative action and managing diversity are in fact the same. Similarly, discriminatory practices are only a dimension of the ineffective management of diversity. We do suggest that quality affirmative action programs and guilty verdicts concerning discriminatory practices may respectively indicate the effective and ineffective management of diversity.

Event study methodology, which is extensively used in financial economics and more completely described later in this study, was used to analyze the impact of related announcements on stock prices. If quality affirmative action program awards are perceived as economically beneficial, the firm's stock price should react favorably to the announcement of such an award. If discrimination is recognized as economically harmful, the firm's stock price should react negatively to announcements that suggest discrimination is practiced.

LITERATURE REVIEW AND HYPOTHESES

Individuals and organizations in America are not uniformly race- and gender-neutral. Race and gender may determine an individual's political rights, selection for employment, and access to medical care (Omi & Winant, 1986). Race may be a means through which job barriers are set and labor divided in organizations (Reich, 1981). Race and gender also tend to influence income in America (Fernandez, 1993). Gender may not only affect initial employment opportunities, but also progression in an organizational hierarchy. For instance, Taylor and Ilgen (1981) found that both men and women, when asked to make placement assessments, were likely to place women in unchallenging rather than challenging jobs, and Hitt and Barr (1989) found that sexual bias tended to limit the compensation and opportunities for promotion of employed women.

Prior research related to discrimination has found compensation discrimination against women (Terborg & Ilgen, 1975; Schwartz, 1989), promotion discrimination against women (Cox & Nkomo, 1986; Stewart & Gudykunst, 1982), barriers to women's access to authority on the job (Noe, 1988; Wolf & Fligstein, 1979), racially motivated job treatment discrimination (Greenhaus, Parasuraman, & Wormley, 1990; Ilgen & Youtz, 1986), and hiring and promotion discrimination resulting in low minority representation in management (Greenhaus et al., 1990; Killingsworth & Reimers, 1983).

The conclusions of these studies suggest the need for further development of quality affirmative action programs.

A noteworthy exception is a study by Shenhav (1992), who concluded empirically that women and minority members enjoyed better promotion opportunities than equally qualified white men. Shenhav argued, however, that his results should not be taken as evidence that affirmative action is no longer necessary. He stated that the promotional advantages enjoyed by women and minorities do not suggest the absence of a white male advantage in managerial positions.

As stated earlier, the focus of this research was on the financial market's reaction to award-winning affirmative action programs and to announcements of discriminatory practices. Specifically, we asked, "Are there economic gains associated with quality affirmative action programs?" and "Are there economic losses associated with discrimination?" We were interested in determining whether investors viewed quality affirmative action programs as contributing to competitive advantage. We expected such a view to raise the price of the common stock of a firm with such a program. Expectations were the reverse for discriminatory practices on the part of firms.

Many early studies of discrimination (Kovarshy, 1964; Northrop, 1969) emphasized the examination and verification of its existence. In the 1970s, the 1980s, and the early 1990s, the research emphasis shifted to an analysis of bias in performance ratings and evaluations. Among such studies were those by Hamner, Kim, Baird, and Biogness (1974), Kraiger and Ford (1985), Mobley (1982), Schmitt and Lappin (1980), and Greenhaus and colleagues (1990). Other research issues examined have included minority attitudes toward employment (Alper, 1975; Gavin & Ewen, 1974), minority motivational profiles (Brenner & Tomkiewicz, 1982; Miner, 1977), organizational compliance with Title VII and affirmative action guidelines (Hitt & Keats, 1984; Marino, 1980), perceived barriers to gaining mentors (Ragins & Cotton, 1991), ethnic group cultural differences on cooperative and competitive behavior on a group task (Cox et al., 1991), and the management of cultural diversity (Cox & Blake, 1991).

Our exploration is proposed as a promising approach to the study of the management of diversity and a natural extension of the existing literature. By examining the economic impacts of high-quality affirmative action programs and discriminatory practices, we can obtain objective criteria to include in the overall evaluation of such programs and practices. Moreover, the findings should be of interest to managers as they design and evaluate personnel policies in the context of sustaining competitive advantage.

Our premise is that quality affirmative action programs entail several benefits for organizations and have economic ramifications. First, such programs are a means through which corporations can benefit from the contribution of the prevalent multicultural work force. Since labor markets will be fueled by women and minorities (Dreyfuss, 1990), and since white men will continue to be a decreasing minority (Thomas, 1990), enterprises must compete in recruiting women and non-Caucasians. Publicly disseminated infor-

mation on firms' quality affirmative action programs and published accounts of which firms provide good environments for women and minority members should contribute to the recruitment of the best and the brightest among those groups for these enterprises (Cox & Blake, 1991). One economic benefit of quality affirmative action programs, then, may be that such programs enable firms to recruit and capitalize on the contributions of talented human beings.

Second, firms with quality affirmative action programs may have lower absenteeism, turnover, and job dissatisfaction in their work forces and thus, lower operating costs (Schwartz, 1989). Third, corporations with such programs may enhance their reputations with potential customers. Just as women and minority members may prefer to be employed by corporations that value diversity, they may likewise choose to purchase from such firms (Cox & Blake, 1991). Furthermore, corporations with quality affirmative action programs may be more creative, may have better problem-solving capabilities, and may find strong community and institutional support because of their cultivated diverse work forces. Thus, they may be more capable of enhancing their differentiation.

If investors perceive that quality affirmative action programs are valuable and that such programs entail economic benefits, they should be willing to value the stocks of firms with such programs more highly. Thus,

Hypothesis 1: Announcements of firms' receiving awards for high-quality voluntary affirmative action programs will be associated with significant and positive stock price changes for those firms.

Our other premise was that discriminatory organizational practices are harmful and have negative economic consequences. Firms that discriminate will find fewer people to choose from because the recruitment pool of white men is decreasing (Johnston, 1991). Because of public dissemination of information on firms that discriminate, few, if any, talented women and minority members will seek employment with such firms (Cox & Blake, 1991). The cost structure of corporations with discriminatory practices will be higher not only because they tend to have high absenteeism, turnover, and job dissatisfaction (Schwartz, 1989), but also because the probability that they will face costly legal actions is high. Moreover, their customer bases may shrink because most buyers are women and minority members (Cox & Blake, 1991). Finally, such firms are less likely to find community and institutional support, as the members of the institutions interacting with firms and of the broader community are increasingly women and minorities. These firms, then, may be not only less efficient, but also less capable of positively enhancing their differentiation.

Hypothesis 2: Announcements that convey that firms are guilty of discriminatory practices will be associated with significant and negative stock returns for those firms.

METHODS

Analysis

To examine the impacts of both exemplary affirmative action programs and damage awards for discrimination suits, we employed the event study methodology common in financial economics research (e.g., Dodd & Warner, 1983). The essence of this approach is to determine if there is a significant change in the price of a firm's stock on the days immediately surrounding the announcement of an event of interest.

Criticisms of this method emphasize uncertainty in event dates and possible contamination of effects by events surrounding the event under study. In this study, we controlled for both possible sources of bias through the process of sample construction. For the award-winning firms, the exact dates of the award announcements were available from copies of the Department of Labor's news releases. For firms agreeing to settlements in discrimination suits, we determined the dates of the first public announcements from both the *Wall Street Journal Index* and the Dow Jones News Retrieval Service. We then scanned these sources for the 90 days before and after each event to identify the occurrence of other, economically relevant events. We dropped firms reporting other events from our sample in order to prevent bias in our empirical findings.

Application of the event study method focuses on the pattern of daily stock rates occurring over a period surrounding an event. Examining the surrounding period allows a researcher to determine if there is evidence of information leakage prior to the event or a lingering effect in the postevent period. Generally, the impact on shareholder wealth is focused on the actual event day itself because investors are quick to respond to events that contain information relevant to a firm's future financial performance.

The actual daily rates of return on a firm's stock are adjusted for expected rates of return, which are estimated through use of an empirical model called the Capital Asset Pricing Model (CAPM) (Brown & Warner, 1985). The assumption underlying the CAPM is that high rates of expected return compensate investors for bearing high risk. An important distinction in this model is made between systematic and unsystematic risk. Only systematic risk, which is marketwide and consequently undiversifiable, is rewarded in the capital markets. A firm's measure of its systematic risk is its beta coefficient. Unsystematic risk is not rewarded since it can be dissipated through the construction of a portfolio of securities.

Critics of the CAPM invoke the possible existence of risk factors other than the beta coefficient and various econometric issues associated with the model's empirical application. Advocates of the major alternative model to the CAPM, the Arbitrage Pricing Theory (APT) of Roll and Ross (1980), however, have been unable to identify a stable set of measurable additional risk factors. This lack makes the theory unsuited to meaningful empirical applications. Recent advancements in econometric measurement and test-

ing, especially with regard to estimation of beta, have muted many of the earlier criticisms of the CAPM (Brown & Warner, 1985).

A stock's expected return on a given day was estimated as follows:

$$\text{Expected} = \text{Risk-free return} + \text{beta} \times (\text{market return} - \text{risk-free return}),$$

where

expected = the expected daily rate of return for the stock,

risk-free return = the return on a riskless asset, such as a U.S.
government bond,

beta = a measure of the firm's systematic risk,

and

market return = the expected return on the market portfolio for that
day.

The expected return incorporates the impact of marketwide or macroeconomic factors such as the gross national product and unemployment and interest rates. The expected return is subtracted from the actual return to obtain the excess return.

For each day in our period of analysis, referred to as the event window, we calculated a firm-specific excess return. We then averaged the excess returns of the firms in each sample to obtain mean daily excess returns. These values are reported on both a daily and a cumulative basis. We calculated the excess rate of return to control for systematic influences on the level of stock returns that could distort our estimate of the rate of return attributable to firm-specific performance. Results of this approach are extremely robust.

Sample Construction

The U.S. Department of Labor's presentation of its annual Exemplary Voluntary Efforts Award was chosen as the appropriate event to indicate that a firm had a high-quality affirmative action program. This award has high public visibility and consequently, the exact dates of announcements of winners can be identified from public documents. Moreover, since multiple awards are presented on single dates, we could construct a sufficiently large sample for statistical analysis.

These awards are presented by the director of the Office of Federal Contractor Compliance Programs (OFCCP). Companies and the regional directors of the OFCCP make nominations for the award. The nominees must be free from problems with compliance review or complaint investigations by the Equal Employment Opportunity Commission or other federal agencies. Broadly, the requirements for being nominated include a commitment to equal employment opportunity with demonstrated results, a desire to go beyond "business-as-usual" practices, and the initiation of programs that are replicable by other corporations. Approximately six awards are presented annually.

Although the award was established in 1983, the U.S. Department of Labor does not maintain documentation identifying winners from before 1986. Drawing on annual press releases provided by the labor department, we constructed a list of 1986–92 award winners and drew our sample from this group of firms.

For a firm to be included in the sample, it had to have been listed on either the New York or American stock exchange during the investigation period. We set this requirement because only stocks traded on these exchanges are traded frequently enough to allow for reliable statistical estimation; in addition, their return history is available on the Center for Research in Securities Prices (CRSP) data tapes. Our sample, contained in Table 1, consisted of 34 award-winning firms representing a variety of businesses,

TABLE 1
Winners of Exemplary Voluntary Efforts Awards

Company	Date of Award
Glaxo	September 17, 1992
Motorola	September 17, 1992
Pfizer	September 17, 1992
Society Corporation	September 17, 1992
United Technology Corporation	September 17, 1992
Wisconsin Gas Company	September 17, 1992
Anheuser-Busch Company	September 19, 1991
Polaroid Corporation	September 19, 1991
Tenneco Incorporated	September 19, 1991
Marriott Corporation	October 23, 1990
Potomac Electric Power Company	October 23, 1990
Schering Plough Corporation	October 23, 1990
Stein Hall & Company	October 23, 1990
Turner Corporation	October 23, 1990
United States West	October 23, 1990
Westinghouse Electric Corporation	October 23, 1990
Barnett Banks Incorporated	December 18, 1989
Procter and Gamble Company	December 18, 1989
Southern New England Telecommunications	December 18, 1989
Texas Instruments	December 18, 1989
Allied Signal	November 15, 1988
Duke Power Company	November 15, 1988
EG&G	November 15, 1988
McDonnell Douglas Corporation	November 15, 1988
Quaker Oats Company	November 15, 1988
Syntex Corporation	November 15, 1988
Scott Paper Company	July 22, 1987
Xerox Corporation	July 22, 1987
Bank of America Corporation	July 9, 1986
Digital Equipment Company	July 9, 1986
General Mills	July 9, 1986
Johnson & Johnson	July 9, 1986
Philip Morris Company	July 9, 1986
Raytheon Company	July 9, 1986

including industrial manufacturers, regulated utilities, financial services, and consumer goods producers. Firms were large, with an average asset size of \$130 million.

Our second event consisted of announcements, found in the *Wall Street Journal Index* and the *Dow Jones News Retrieval Service*, of major settlements by firms found to be guilty of discrimination. The second sample was constructed to explore whether the settlement announcements were associated with significant, negative stock price changes. We obtained reports of 35 publicly traded companies' settlements for the 1986-92 period. The event date was the first public announcement of a firm's settlement in response to having been found guilty of discriminatory practices. For the same reasons provided above, for a firm to be included in the sample, it had to have been traded on the New York or the American stock exchange during the period of the study. Table 2 lists the firms settling discrimination suits. These firms were very large, reporting a mean value for assets of \$207 million, and were in diverse businesses, with no particular industry dominating.

Investors revise their expectations about a firm's prospects, and hence its stock price, only upon the announcement of new, economically relevant information. If an announcement does not affect a firm's prospects, there should be no significant excess return in response to its release. Likewise, there should be no significant excess return at the time of an announcement if its content has been anticipated or leaked in advance. If, however, a significant excess return occurs in response to an announcement, it suggests that the announcement will have either net costs or net benefits for the corporation concerned.

RESULTS

Table 3 gives the results of our event study for the winners of awards. In the period preceding the announcement of the awards, the excess returns are not statistically significant. The variations in these excess returns are random fluctuations, driven by chance rather than economic factors. There appears to have been no leakage of the labor department's selectees, and the market was unable to anticipate the likely winners. For the announcement day itself (day 0), however, there is a mean excess return of 0.467 percent. Estimation of the t-statistic indicates that the likelihood of obtaining a residual of this size purely by chance is less than 10 percent. A more significant announcement effect is present on the day following announcements (day +1). This increase probably occurs because the U.S. Department of Labor often announces the award winners late in the afternoon, so financial market investors are unable to completely capitalize on the information on an announcement day. Estimation of t indicates that the likelihood of obtaining a 0.502 percent excess return by chance on day +1 is less than 5 percent. For the remaining nine days following an announcement, the excess rates of return again vary insignificantly. The results for the cumulative

TABLE 2
Firms Found Guilty of Discrimination

Company	Date of Settlement
Coca Cola	September 24, 1992
IBM	July 6, 1992
Lucky Stores	August 19, 1992
Shoney's	November 4, 1992
Apple Computer	April 22, 1991
Northwest Airlines	August 19, 1991
Southwestern Bell	November 4, 1991
USX Corporation	February 27, 1991
General Dynamics	May 7, 1990
Precision Cast Parts Company	May 16, 1990
Commonwealth Edison	February 9, 1989
Deere & Company	March 21, 1989
General Electric Company	October 4, 1989
Hilton Hotels Corporation	March 10, 1989
Kaneb Services	December 5, 1989
Majestic Electronic Stores	January 17, 1989
Neiman Marcus	October 11, 1989
Pan Am Corporation	February 4, 1988
CBS	August 5, 1987
Con Agra	September 4, 1987
General Motors	April 8, 1987
Honda of America	June 3, 1987
Minnesota Mining & Manufacturing	July 27, 1987
Anheuser-Busch	May 15, 1986
Chase Manhattan Bank	February 21, 1986
Du Pont	July 10, 1986
Ford Motor Company	May 2, 1986
Goodyear Tire & Rubber	May 21, 1986
Macmillan Publishing Company	January 8, 1986
Pacific Telesis	December 5, 1986
Southern Bell	February 4, 1986
TWA	June 20, 1986
United Airlines	July 2, 1986
USX Corporation	August 5, 1986
Westinghouse Electric	March 28, 1986

excess returns further confirm the daily residual results. The cumulative excess rates of return vary without significance until day 0, when the impact of the 0.467 percent mean daily residual return is felt, resulting in a significant cumulative excess return of 0.666 percent. Likewise, the 0.502 percent excess return for day +1 produces a significant cumulative residual of 1.168 percent on the same day. Afterward the cumulative excess returns revert to random variations. These results indicate that announcements of quality affirmative action programs are associated with significant and positive excess returns that represent the capitalization of positive information concerning improved business prospects.

TABLE 3
Results of Event Study Analysis for Award Winners

Day	Daily Percentage Residual Rates		Cumulative Daily Percentage Residual Rates of Return	
	of Return	t		t
-10	0.012	1.069	0.012	1.069
-9	0.025	1.053	0.037	1.408
-8	0.033	0.401	0.070	0.810
-7	-0.012	-0.084	0.058	-0.347
-6	0.016	1.346	0.074	0.442
-5	0.003	0.834	0.077	0.460
-4	0.010	1.013	0.087	0.518
-3	0.025	0.819	0.112	0.657
-2	0.073	1.101	0.185	1.011
-1	0.014	1.342	0.199	1.086
0	0.467	1.892†	0.666	1.866†
1	0.502	2.207*	1.168	2.101*
2	0.022	1.083	1.190	1.643
3	-0.054	-1.389	1.136	1.555
4	0.013	1.109	1.149	1.372
5	-0.020	-1.434	1.129	1.561
6	0.031	1.011	1.160	0.842
7	-0.012	-0.989	1.148	0.933
8	0.045	0.763	1.193	0.671
9	-0.024	-1.024	1.169	0.771
10	0.013	0.827	1.182	1.543

† p < .10

* p < .05

Table 4 presents the results of our event study of firms agreeing to damage settlements in discrimination cases. In the days preceding the announcement of a damage settlement, the excess returns vary without statistical significance. On the day of an announcement (day 0), however, we observe a significant, negative excess return (-0.372%). Estimation of the t-statistic indicates that the probability of obtaining a residual of this size by chance is less than 5 percent. It is noteworthy that the effect of the settlement announcements is not fully realized on the announcement day. On the day following an announcement (day +1), we also observe a significant loss (-0.098%). This effect may be the result of late reporting of some of the settlement announcements. For the remaining days, the daily excess rates of return again vary randomly. The results for the cumulative excess returns provide further confirmation. The cumulative residual returns vary without significance until day 0, when the impact of the -0.372 percent mean daily residual return is reflected, resulting in a significant cumulative residual of -0.223 percent. Similarly, on day +1 the -0.098 percent mean daily residual return results in a significant cumulative residual of -0.321 percent. Subsequently, the cumulative residual rates of return revert to random variation. Our results suggest that announcements of discrimination settlements

TABLE 4
Results of Event Study Analysis for Discriminatory Firms

Day	Daily Percentage Residual Rates		Cumulative Daily Percentage Residual Rates of Return	
	of Return	t	of Return	t
-10	0.024	0.989	0.024	0.989
-9	0.008	0.575	0.032	1.143
-8	-0.012	-1.143	0.020	0.669
-7	-0.017	-0.765	0.003	0.805
-6	0.037	1.243	0.040	1.020
-5	0.019	1.549	0.059	1.162
-4	0.038	1.178	0.097	1.468
-3	0.053	0.997	0.150	1.089
-2	-0.002	-1.249	0.148	1.086
-1	0.001	0.874	0.149	1.107
0	-0.372	-2.122*	-0.223	-2.462*
1	-0.098	-1.874†	-0.321	-2.214†
2	0.010	1.666	-0.311	-1.466
3	0.024	1.539	-0.287	-1.321
4	-0.017	-1.272	-0.304	-0.927
5	0.063	0.843	-0.241	-0.781
6	0.047	0.849	-0.194	-1.274
7	0.033	0.771	-0.161	-1.341
8	0.029	1.217	-0.132	-0.986
9	-0.076	-1.098	-0.208	-0.979
10	0.034	1.293	-0.174	-1.124

† p < .10

* p < .05

are associated with significant and negative stock price changes, which represent the capitalization of negative economic implications associated with discriminatory corporate practices.

DISCUSSION AND CONCLUSION

The findings of this study indicate that high-quality affirmative action programs contribute to sustaining a competitive advantage and are valued in the marketplace. The extensive financial literature on capital budgeting (e.g., Scholl, Sundem, & Geijsbeek, 1978) indicates that valuable investments increase a firm's stock price, and our research shows that investors bid up the stock price of firms that receive Department of Labor recognition for their development of quality affirmative action programs.

Since sustaining competitive advantage depends on using valuable human and organizational resources, we assume that quality affirmative action programs better enable a firm to recruit, develop, and maintain these critical resources. Presumably, talented people will be attracted to corporations that value their capabilities. Furthermore, talented people are more likely to invest themselves in organizations that evaluate them on the basis of merit rather than demographic profile. Thus, we anticipate that quality affirmative

action programs can be associated with improved future business prospects and higher stock prices.

Our conjecture is that the favorable market reaction to announcements of corporations' winning awards may be a result of investors' realization that the corporations might have lower costs than other companies because they have lower absenteeism, turnover, and job dissatisfaction levels. Such firms may also have more productive employees. Finally, the favorable market reaction may be a response to the probability that such firms have better reputations with their diverse customers or more creative cultures; or they might be better problem solvers or more adaptable to external environmental changes. All these attributes contribute to their differentiation (Wright et al., 1994).

Contrarily, we assume that discriminatory corporations will not have the same access to talented human resources. In fact, talented people may be predisposed to avoid companies that discriminate, and if they are hired by such organizations, they will be unlikely to further develop their strengths once on the job when their evaluations are conditioned upon their demographic profiles. Consequently, firms with discriminatory practices may have less talented and committed work forces, high operating costs because of high turnover, absenteeism, and job dissatisfaction, poor reputations with their diverse customers, less creative cultures, poor problem solving, and low adaptability (Cox & Blake, 1991). Hence, such firms may not be capable of achieving positive differentiation, and investors will tend to bid down their stock price.

Two potential limitations are inherent in our empirical exploration. Investors may have simply reacted to the positive nature of announcements of awards for quality affirmative action programs rather than viewed such programs as providing competitive advantage. Similarly, investors might have reacted to the negative news of announcements of discriminatory damage settlements rather than viewed the discriminatory practices as constraining the achievement of competitive advantage.

In the 1990s and into the next century, competition will continue to become both more intense and more global. American corporations are uniquely positioned among international firms to gain competitive advantage. European and Japanese businesses have little ability to incorporate diversity as their experience is chiefly restricted to foreign conquest and colonization (Fernandez, 1993). In America, however, laws and programs addressing discrimination have been in existence for decades.

Our conclusion is that the prevalent organizational ethnic and gender bias (Hitt & Barr, 1989) should be eradicated not only because such bias is not ethical or moral, but also because it does not make economic sense. As the climate of competition becomes more intense, no enterprise can afford the senseless practice of discrimination. In fact, America's cultural diversity may provide a competitive advantage for unbiased U.S. corporations over both domestic rivals that discriminate and European and Japanese companies in the world marketplace.

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POLLUTION REGULATION AS A BARRIER TO NEW FIRM ENTRY: INITIAL EVIDENCE AND IMPLICATIONS FOR FUTURE RESEARCH

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Researchers have suggested that environmental regulations may deter the entry of firms into industries, and their assertions imply that an advantage is thereby conferred on incumbent firms. Empirical analysis showed that environmental regulations inhibited new firm entry in a variety of manufacturing industries. Implications for affected firms and future research are discussed.

Environmental statutes have been enacted in earnest in the United States throughout the past several decades, and evidence indicates that the legislation has provided considerable social and economic benefits, including reductions in illness and mortality rates and damage to vegetation and improvements in aesthetics and recreational opportunities (Carlton & Perloff, 1990). Environmental legislation has also had a dramatic impact on the operation of firms in the United States. In general, firms have largely assumed that there are numerous costs and few, if any, strategic benefits associated with environmental regulations. A 1991 survey of business executives revealed that environmental compliance expenditures ran about 2 percent of sales (Newman & Breeden, 1992), and Robert Kennedy, chairman and CEO of Union Carbide, has estimated expenditures in the chemical industry to be as high as 3-4 percent (Greeno & Robinson, 1992). Additionally, producers in pollution-intensive industries generally experience difficulty in passing the costs of compliance on to consumers because of elasticity of demand (Carlton & Perloff, 1990).

However, plausible arguments and indirect empirical evidence exist to support the contrary view, that some firms may acquire strategic benefits from environmental regulations. Many of these arguments rely on the potential for environmental regulations to affect certain types of firms more severely than others. Interfirm variability in the impacts of regulations in-

We would like to thank Alex Miller, Lawrence R. James, Gerald E. Fryxell, William Q. Judge, Michael A. Hitt, and this journal's anonymous reviewers for their advice in designing and improving this study. We would also like to thank the U.S. Small Business Administration and New York University's Center for Entrepreneurial Studies for their contributions to this research.

fluences the competitive positions of certain groups of firms and may redistribute intraindustry profits (Pashigian, 1984). Several authors (e.g., Barrett, 1991; Brock & Evans, 1986; Pashigian, 1984; Porter, 1980; Scherer & Ross, 1990) have suggested that environmental regulations may have unequal impacts in the sense that they may place a heavier burden on new firms.

From a strategic perspective, an asymmetrical influence that favors firms already operating in an industry, called incumbents herein, confers advantage on them by increasing barriers to the entry of new firms, and may imply that some firms should reconsider their traditional perspective on environmental regulations. Indeed, incumbents may be able to use environmental regulations to their advantage, and the regulations may even create economic benefits in certain contexts (Barrett, 1991, 1992; Porter, 1980, 1990).

Despite theoretical arguments and modest indirect evidence supporting the potential for environmental regulations to deter the entry of firms into industries, the impact of environmental regulations on entry has not been directly examined. Inquiry into this area holds promise for increasing understanding of the complex interaction between environmental regulations and the competitive dynamics of industries. This study provides a theoretical and empirical examination of the entry-deterrant effects of pollution control requirements across a broad set of manufacturing industries.

ENVIRONMENTAL REGULATIONS AND NEW FIRM ENTRY

Within the economics literature, entry refers to a firm's establishing operations in an industry or market in which the firm was not previously present (Scherer & Ross, 1990). New firm entry refers to the establishment of operations in an industry by a firm that did not exist prior to its entrance into that industry. Entry barriers, a variety of industry structural conditions that may discourage entry into an industry, have been defined as "the advantages of established sellers in an industry over potential entrant sellers" (Bain, 1956: 3). Entry barriers have also been conceptualized as "a cost of producing which must be borne by a firm which seeks to enter an industry but is not borne by firms already in the industry" (Stigler, 1968: 67). Though not entirely consistent in their results, empirical studies have generally verified the prohibitive impact of a number of entry barriers (e.g., Acs & Audretsch, 1989; Harrigan, 1981; Shapiro & Khemani, 1987).

Environmental regulations may create barriers to the entry of new firms through a number of mechanisms that include the increased capital required for efficient entry into pollution-intensive industries, the added complexities involved in business operations, the expanded difficulties and costs in siting and permitting new operations, and the stricter regulatory standards that often apply to new facilities. However, theoretical analysis of the impact of environmental regulations on new firm entry would be incomplete without the consideration of a number of mechanisms by which environmental regulations may actually encourage the formation of new firms. Entry in-

ducements engendered by environmental regulations may include a tiered regulatory structure that favors small firms, the ability of new firms to achieve greater pollution abatement efficiencies through the simultaneous choice of production and abatement technologies, opportunities resulting from demand growth in pollution abatement equipment industries, and large-firm divestiture of liability-generating activities.

Each of these potential impacts of environmental regulations on new firm entry is examined below, and they are summarized in Table 1. Overall, we hypothesized that these mechanisms would have a net deterrent impact on new firm entry.

Environmental Regulation as a Barrier to New Firm Entry

Environmental regulation and capital requirement barriers. The traditional argument offered for the entry-deterrant effects of pollution control regulations is that they increase the size of operations needed for efficient production and thereby increase the capital required for entry (Brock & Evans, 1986; Pashigian, 1984; Porter, 1980; Scherer & Ross, 1990). "There are scale economies in regulatory compliance if the average cost of complying with regulations—measured by the total cost of complying with regulations divided by firm size—decreases with firm size" (Brock & Evans, 1986: 65). Scale economies may exist in both the productive and administrative aspects of compliance (Brock & Evans, 1986; Scherer & Ross, 1990).

Environmental regulations increase productive scale economies by mandating specific actions or outcomes from waste-generating producers. Because compliance is capital-intensive and often requires the installation of equipment with high fixed costs, such as particulate and sulfur dioxide scrubbers, solvent recovery systems, and wastewater treatment plants, the

TABLE 1
Effects of Environmental Regulations on New Firm Entry

Effect Source	Predicted Direction of Impact
Increased capital requirements barriers	
Productive economies of compliance	Negative
Administrative economies of compliance	Negative
Learning curve impacts due to regulatory complexities	Negative
Difficulties in siting and permitting new operations	Negative
New/Incumbent regulatory tiering	Negative
Size tiering	
Regulatory exclusions	Positive
Asymmetries in enforcement	Positive
Asymmetries in the actions of environmental groups	Positive
New firms can choose production and abatement technologies simultaneously	Positive
Demand growth in pollution abatement equipment industries	Positive
Large firm divestiture of liability-generating activities	Positive
Hypothesized net effect	Negative

optimal size of plants tends to increase (Brock & Evans, 1986; Chen & Metcalf, 1980). The expected increase in minimum efficient scale may be exacerbated by the technology-forcing rules included in many environmental regulations. Such rules do not allow individual firms to choose pollution abatement methods appropriate to the scale of their operations (Pashigian, 1984). Furthermore, pollution abatement equipment may be subject to its own economies of scale. If scale mismatches exist between available pollution abatement technologies and a firm's production processes, the firm must either increase its size of operations or absorb the resulting inefficiency.

Administrative economies of scale may also exist in firms' regulatory compliance activities. Empirical research has indicated that regulations may affect smaller organizations that lack the specialized resources needed to handle regulatory compliance more severely than large organizations (Birnbaum, 1985; Ungson, James, & Spicer, 1985). The costs of discovering and interpreting relevant regulations and of dealing with regulatory agencies and the paperwork associated with the process have a large fixed-cost component that increases the scale necessary for efficient compliance (Brock & Evans, 1986; Scherer & Ross, 1990). Firms that can spread these administrative compliance costs over a larger volume of production will likely gain a per unit cost advantage.

A number of studies have shown that economies of compliance exist for some regulatory requirements (Brock & Evans, 1985). Additionally, a few studies have attempted to verify the specific relationship between environmental regulations and compliance economies. In a study of manufacturing industries, Pashigian (1984) examined the increases in efficient scale resulting from pollution control activities. He found that environmental regulations were responsible for increases in plant size as well as for increases in capital intensity. In a study of pulp and paper mills, Pittman also found a positive relationship between pollution control and plant scale economies, concluding that "treatment requirements increase the minimum efficient size of plant, thus increasing barriers to entry and exacerbating any lack of competition in the industry" (1981: 13).

The result of productive and administrative economies of scale is to create a barrier to entry described by Bain as the "absolute capital requirement effect" (1956: 55). The amount of capital needed to enter an industry at the minimum efficient scale may be sufficiently large that few potential entrants will be able to secure the required funding without being placed at a capital-cost disadvantage. Given the above discussion, high industry pollution abatement requirements might be expected to deter new firm entry by creating additional capital requirements.

Environmental regulation, complexity, and learning curve effects. A deterrent effect of environmental regulations may also result from the complexities that compliance requirements introduce into business operations. Firms facing environmental regulations encounter an array of political, tech-

nical, administrative, and legal issues that add to the complexity of their activities. Complexity is increased by the presence of multiple and overlapping statutes, at the federal, state, and local levels, with varying degrees of stringency and extensive reporting and permit requirements. Difficulties in managing the interfaces between regulators, abatement technologies, production processes, and administrative procedures add to these complexities.

The effect of regulatory complexity on new firm entry can be understood through the concept of the learning curve. According to this idea, unit costs decline as a firm learns by doing, and the existence of significant learning curve effects typically implies that new firms face entry barriers that are due to higher per unit costs (Porter, 1980; Scherer & Ross, 1990). Applied to environmental compliance activities, this idea suggests that the more a firm deals with environmental regulatory agencies and has to perform pollution control activities, the more the firm learns (1) which regulations and agencies apply to its activities and how to effectively handle them, (2) which pollution abatement technologies apply to its production processes and how to use them effectively, and (3) how to best modify its organizational and administrative processes to carry out these tasks. In other words, compliance learning translates into lower per unit compliance costs for incumbents (Monty, 1991), circumstances that potentially inhibit new firm entry. However, regulation-induced learning curve barriers may be reduced if a new entrant can gain the necessary knowledge and techniques by hiring consultants or employees with regulatory expertise (Scherer & Ross, 1990).

Environmental regulation, new source standards, and facility siting. Many environmental regulations, including the 1974 Clean Water Act and the 1977 Clean Air Act, place a heavier burden on new pollutant sources than on existing ones, whether large or small (Liroff, 1986). Given that new firms are likely to be subjected to the stricter new source standards, they may be placed at a cost disadvantage relative to existing firms and may thereby be dissuaded from entering pollution-intensive industries.

Similarly, increased requirements to obtain permits resulting from environmental laws and heightened public scrutiny of the establishment of new productive capacity may also deter the formation of new firms. In a study of industrial sitings, Duerksen (1983) concluded that the rules for industrial sitings changed dramatically in the 1970s, making the siting process very difficult for businesses. Primary causes were argued to be overlapping and contradictory permit reviews, changing laws and regulations, lengthy judicial reviews, and a general lack of understanding on the part of business planners, regulators, and environmental groups. He also concluded that the regulatory system's structure lengthened the process of obtaining permits and that administrative decisions often lacked finality since they could be reversed or challenged in court. The difficulties of obtaining the permits and the public approval required for the opening of a new plant can provide an advantage to existing operations, potentially deterring new firm entry.

Contrary to the discussion above, some arguments suggest that environ-

mental regulations may actually provide inducements to the entry of new firms. The potential entry-inducing impacts of environmental regulations are discussed below.

Environmental Regulation as an Inducement to New Firm Entry

Environmental regulation and size tiering. New firms, to the extent that they enter at a small scale, may benefit from regulatory exclusions of small firms or reduced enforcement actions (Pashigian, 1984). Regulations that impose less stringent requirements on small firms than on large firms are referred to as "tiered" (Brock & Evans, 1985). Size tiering may result from asymmetries in substantive requirements, reporting requirements, or enforcement activities (Brock & Evans, 1985). Legislators have often deemed it appropriate to shield small firms from regulations and to minimize the potentially disproportionate effects of regulations on small business (Evans, 1986). Furthermore, regulators seeking to maximize returns on enforcement efforts are more likely to focus on large firms, which are likely to offer the greatest pollution reductions. Finto (1990) argued that limited enforcement budgets within the Environmental Protection Agency have resulted in large firms being scrutinized more closely. In a related vein, a size-tiering effect in enforcement may result from the activities of environmental groups. Greve (1989) analyzed notices of intent to sue under provisions of the Clean Water Act and concluded that the firms environmental groups targeted were not necessarily the worst polluters. Rather, the most targeted organizations were large firms, since they were the most likely to accede to substantial settlement demands in order to avoid damage to their reputations. In support of the existence of size tiering, Evans (1986) found that the average pollution abatement cost per employee in manufacturing industries was less for small firms than for large firms.

Environmental regulation and simultaneous choice of technologies. A second inducement may result from the advantage that new firms can gain by choosing production and pollution abatement technologies simultaneously. Selecting abatement and production technologies simultaneously can lead to greater abatement efficiency relative to abatement methods that are applied to productive technologies that were not designed with current environmental regulations in mind. Existing firms must either live with the potential inefficiencies of applying pollution abatement technologies to their present productive assets or replace those assets with ones that are designed with current pollution abatement requirements in mind. The cost burdens of replacing existing techniques earlier than planned (Kemp & Soete, 1992) may inhibit existing firms from adopting more efficient integrated technologies, thereby providing a relative cost advantage to new firms.

Environmental regulation and demand for pollution abatement equipment. A third inducement impact of environmental regulations may result from opportunities presented by increased demand for pollution abatement equipment (Porter, 1990). To the extent that regulations engender increased

demand for pollution abatement equipment, opportunities may be created for alert entrepreneurs to manufacture and sell such equipment in a growing market. Although anecdotal evidence supports an entry-inducing effect of growth in these markets, the extent of the impact on entry has yet to be rigorously investigated.

Environmental regulation and divestiture of liability-generating activities. Some corollary evidence (Barney, Edwards, & Ringleb, 1992) suggests that large incumbent firms may have divested themselves of operations involving hazardous materials in order to avoid potential legal liabilities and that the divested activities are now being performed by firms that are small, new, or both. Barney and colleagues (1992) measured the percentage of workers exposed to hazardous materials in an industry and found a positive relationship between this variable and the percentage change in the industry's number of small firms in the period from 1967 to 1980. The implication of these results for the present study is that potential liabilities inherent in pollution-intensive industries may lead to the divestiture of pollution-intensive operations by large firms and the consequent formation of low-asset replacement firms.

The Net Effect of Environmental Regulations: Entry Deterrence

Empirically, it was unclear whether the net impact of the aforementioned mechanisms inhibited or encouraged new firms. A closer theoretical examination of the impacts of environmental regulations and corollary empirical evidence suggested that the inducement effects would be minimal and likely overpowered by the deterrent effects.

First, researchers have focused extensively on the potential for environmental regulations to increase minimum efficient scale and the capital required for entry into pollution-intensive industries. As noted above, studies by Pashigian (1984) and Pittman (1981) have verified that increases in minimum efficient scale result from environmental regulations. Furthermore, studies of entry into manufacturing industries have generally supported the potential of capital requirements to deter the entry of firms (e.g., Shapiro & Khemani, 1987). Thus, we expected the increases in capital requirements resulting from environmental regulations to have an important impact on new firm entry.

Second, the complexities created by environmental regulations were expected to create strong learning curve barriers to new firm entry as a result of numerous and overlapping statutes and regulations and extensive reporting and monitoring requirements.

Third, logic and evidence did not suggest that regulations would have significantly different impacts on small and large firms. Empirical studies have not conclusively verified the existence of a significant size-tiering effect. Evans (1986) found pollution abatement costs per employee to be lower for small manufacturing firms, but Pashigian (1984) found that environmental regulations decreased the number of plants in pollution-intensive manufacturing industries and reduced the market shares of small plants. In ad-

dition, even if a size-tiering structure did act as an inducement to entry, it would be offset to some degree by the more onerous requirements placed on new firms by the new source standards present in many environmental regulations, as well as by the extensive permit requirements and public scrutiny involved in siting new plants.

Fourth, although environmental regulations provide opportunities for new sales of pollution abatement equipment, only a few industries would experience growth from such sales. Although new firms would likely form in response to this growth, the number of formations would likely be negligible when compared to the broader set of industries that experienced an inhibitory impact.

Finally, although Barney and colleagues' (1992) results suggest that some new firms will be formed as a result of large incumbents' divestitures of environmentally damaging operations, this effect will likely be limited within the context of the present research question. Potential liability can only be effectively avoided if a firm has minimal assets (Barney and colleagues specified an asset threshold of \$100,000), and it is likely that few businesses can operate efficiently with such minimal assets. This insight does not imply that no firms have been created specifically to avoid environmental liabilities, but it does suggest that Barney and colleagues' evidence is only generalizable to certain types of new firms—those with minimal assets.

The above arguments implied that potential entry-deterring mechanisms would likely exhibit a strong impact but that the potential entry-inducing mechanisms would be limited to a few industries and situations, or would be superseded by inhibitive mechanisms. Thus, we expected the net effect of these multiple influences to represent a barrier to the entry of new firms.

Hypothesis 1: Industry pollution regulation compliance requirements will have a net deterrent impact on new firm entry.

METHODS

Procedures

The empirical analysis employed a multiple linear regression technique to test for the net impact of pollution abatement intensity on new firm entry. The regression equation included the dependent variable (new firm entry), a measure of the extent to which environmental regulations affect industries (pollution abatement intensity), and a number of control variables. The control variables included six barrier and inducement measures previously found to influence entry. Both the industrial organization economics and strategic management literatures have extensively addressed entry barrier and entry inducement variables, and empirical studies have indicated that these variables have significant influences on rates of entry (Dean & Meyer,

1992; Gorecki, 1975; Highfield & Smiley, 1987; Porter, 1980). The control variables were advertising intensity, excess capacity, industry concentration, sales growth, capital requirements, and research and development intensity. For theoretical discussions and empirical studies of entry barriers, readers can consult Acs and Audretsch (1989), Harrigan (1981), Highfield and Smiley (1987), Porter (1980), Scherer and Ross (1990), and Shapiro and Khemani (1987).

Sample

The sample was taken from a population of 449 U.S. manufacturing industries, with industry defined by four-digit Standard Industrial Classification (SIC) code. Following the method of Duetsch (1975), we omitted 15 nonhomogeneous industries with SIC code descriptions of "not elsewhere classified" from the sample. After elimination of nonhomogeneous industries and those with missing data, the final sample consisted of 306 industries, or 68 percent of the population.

Because analysis of the industries included in the sample revealed a slight bias against highly concentrated industries, the results may not be generalizable to such industries. Data from the late 1970s were chosen for two reasons. First, the 1970s probably represented the quantitative apex of enactments and amendments of environmental statutes. The Resource Conservation and Recovery Act, Toxic Substances Control Act, Clean Air Act, and Clean Water Act were either enacted in the 1970s or underwent extensive modifications in those years. Thus, it seemed to be an appropriate period to use to gauge the impacts of the regulations. Second, 1977 was the last year for which Federal Trade Commission (FTC) reports were available for variables such as advertising and R&D intensity. FTC reports are considered to be a superior source of data since the figures are aggregated at the line-of-business level (Scherer & Ross, 1990).

Data Sources and Measures

Data sources included a file from the U.S. Small Business Administration, *U.S. Establishment and Enterprise Longitudinal Microdata* (USELM); four U.S. Department of Commerce publications, *Census of Manufactures*, *Annual Surveys of Manufacturers*, *Survey of Plant Capacity*, and *Report of Pollution Abatement Costs and Expenditures*; and the Federal Trade Commission's *Annual Line of Business Report*.

The dependent variable, new firm entry, was measured as the logarithm of the 1976 to 1980 count of new, legally independent firms reported in USELM. It is a measure of gross entry since it includes all firms new to an industry rather than the number of new firms net of firms exiting the industry (net entry). Use of the logarithmic transformation followed previous research (Shapiro & Khemani, 1987) and allowed interpretation of relationships between the variables in percentage terms. Following Harrigan (1981),

we lagged independent variable measures one or two years relative to the midpoint of the entry measure (1978).

Pollution abatement intensity served as a proxy for pollution regulation compliance requirements and was measured as an industry's 1977 new capital expenditures for pollution abatement divided by the industry's 1977 total new capital expenditures and multiplied by 100. This operational definition represents the degree to which the studied industries were affected by, and reacted to, the pollution abatement compliance requirements established by environmental regulations.

As in other studies (e.g., Gorecki, 1975), advertising intensity was measured as the ratio of industry advertising expenses to sales, averaged for 1976 and 1977. Following Harrigan (1981), we calculated excess capacity as 100 minus the percentage of practical plant capacity utilization, averaged for 1976 and 1977. Industry concentration was represented by the 1977 four-firm concentration ratio (Acs & Audretsch, 1989; Harrigan, 1981; Highfield & Smiley, 1987). Industry sales growth was measured as the linear trend in the logarithm of industry sales (value of shipments) from 1972 to 1978. Capital requirements were measured as the logarithm of the value of the total book value of industry assets in the beginning of 1977, divided by the number of industry establishments in 1976, and multiplied by 1,000 (e.g., Shapiro & Khemani, 1987). R&D intensity was calculated as the ratio of company-financed industry R&D expenditures to sales averaged for 1976 and 1977 (Acs & Audretsch, 1989).

Table 2 provides descriptive statistics and correlations for all variables. Critical analysis of the data with a variety of techniques (Neter, Wasserman, & Kutner, 1983) revealed that the regression analysis met the assumptions of multiple linear regression methodology. Examination of variance inflation factors suggested that multicollinearity was not an issue. Two independent variables (advertising intensity and R&D intensity) exhibited considerable skewness. However, analysis of residuals assuaged concerns that this distribution characteristic or outliers unduly influenced the regression results.

RESULTS

Table 3 presents the results of the multiple linear regression analysis. The table reports both unstandardized and standardized regression coefficients and significance levels for each independent variable. The significance of the regression coefficient for pollution abatement intensity provides support for the hypothesis that new firm entry is negatively related to pollution abatement intensity. As can be seen in the table, the standardized regression coefficient for pollution abatement intensity suggests that it has a fairly strong impact on new firm entry. Furthermore, most of the control variables exhibited significant relationships with new firm entry, indicating that it was appropriate to include them in the model. The equation's significant adjusted R-square value suggests that the total model explained a large percentage of the variance in new firm entry.

TABLE 2
Descriptive Statistics and Correlations^a

Variables	Means	s.d.	1	2	3	4	5	6	7
1. New firm entry	1.92	0.64							
2. Advertising intensity	1.48	2.18	-.04						
3. Excess capacity	26.51	10.25	-.01	.02					
4. Capital requirements	3.00	0.59	-.55**	-.08	-.16**				
5. Industry concentration	38.01	19.41	-.58**	.14*	.14*	.61**			
6. Sales growth	4.33	1.88	.14*	-.06	-.21**	.22**			
7. R&D intensity	1.12	1.24	.07	.01	.12*	.15**	-.01		
8. Pollution abatement intensity	5.43	8.02	-.30**	-.09	-.04	.35**	.27**	.17**	
						.22**	.22**	.03	-.03

^a N = 306.

* p < .05

** p < .01

*** p < .001

TABLE 3
Results of Regression Analysis

Variables	<i>b</i>	β	<i>t</i>
Intercept	3.378		18.605***
Pollution abatement intensity	-.008	-.095	-2.140*
Excess capacity	-.005	-.080	-1.864
Industry concentration	-.014	-.414	-7.313***
Sales growth	.053	.156	3.491***
R&D intensity	.111	.215	4.821**
Advertising intensity	-.002	-.006	-0.136
Capital requirements	-.317	-.343	-5.940***
<i>R</i> ²	.496		
Adjusted <i>R</i> ²	.484		
<i>F</i>	41.812***		

* $p < .05$

** $p < .01$

*** $p < .001$

IMPLICATIONS AND CONCLUSIONS

Environmental regulations appear to influence rates of new firm entry across a broad range of manufacturing industries. Findings suggest that environmental regulations have a net deterrent effect on new firm entry. Although the methodology used in this study did not allow us to identify the source of the deterrent impact, our conceptual discussion suggests that this relationship may result from increases in the capital required for entry, from a tiering structure favoring existing sources inherent in many environmental regulations, from public scrutiny of new plants, and from the learning curve effects associated with regulatory complexities. Given prior empirical evidence supporting the impact of environmental regulations on minimum efficient scale and plant size (Pashigian, 1984; Pittman, 1981), much of the deterrent effect of environmental regulations may be the result of increases in capital requirements.

Identification of an entry-inhibiting impact of environmental regulations has important implications for incumbents, entrepreneurs, and public policy makers. The primary implication of this study for incumbent firms is that, contrary to an often-expressed view, environmental regulations may do more than just add to the costs of operations. Environmental regulations that place a heavier burden on new entrants confer an advantage on existing firms by increasing the barriers to entry in industries in which pollution abatement is important.

Additionally, the ability of environmental regulations to create barriers to the entry of new firms implies that incumbents may be able to use environmental regulations strategically to enhance competitive advantage and profitability (Barrett, 1991; Brock & Evans, 1986; Porter, 1980, 1990). Available evidence indicates that firms may have been able to influence environ-

mental regulations to their favor (Barrett, 1991), and some incumbents may be well advised to promote environmental legislation that gives them an advantage over new firms. Such an advantage can be achieved by promoting tiered regulations that impose stronger requirements on new firms or by promoting regulations that play into an incumbent's existing strengths.

Because capital requirements increases may play a role in the deterrent impact of environmental regulations, large incumbents may find it beneficial to promote legislation that increases fixed costs (Brock & Evans, 1986). By operating at an efficient scale, incumbents may gain a per unit compliance-cost advantage over potential entrants that do not enter at the efficient scale. Incumbents may also be able to convert their learned compliance skills into a source of cost advantage over potential entrants. Furthermore, Porter (1990) contended that environmental regulations may improve the international competitiveness of domestic firms. Although it would be inappropriate to conclude that our data speak directly to international competitiveness issues, our findings may have some relevance. If environmental regulations create barriers to entry internationally as well as domestically, incumbents may incur international strategic benefits from those regulations.

Incumbents may also be well advised to develop compliance technologies prior to the enactment of domestic or international legislation and then proceed to encourage regulations that employ the developed technology to create entry barriers. For example, Henkel, a German detergent manufacturer, informed the German government that it had developed a detergent ingredient that reduced phosphates by 50 percent and proceeded to build production capacity for the ingredient (Barrett, 1992). The government responded by requiring that detergent phosphates be reduced by that amount, and Henkel benefited from the entry barriers created by the legislation and the firm's investment in sunk production capacity (Barrett, 1992). As Cairncross stated, "Companies that spot what society wants have an opportunity for innovation. . . . Once they have done so, government is likely to raise standards. . . . When this happens, the innovative company acquires a protected market, hedged in by environmental standards that it can meet, but its competitors cannot" (1992: 16).

However, before promoting environmental regulation *per se*, incumbents must consider whether potential barrier-created profit gains offset compliance costs that cannot be passed on to consumers. Incumbents in industries with inelastic demand will be most likely to benefit from barrier-creating regulations because they can pass a larger portion of the compliance costs on to consumers than can firms in industries with elastic demand (Carlton & Perloff, 1990). Industries experiencing an overall growth in demand are also more likely to benefit from the barrier-creating aspects of environmental regulations because they are more likely to be able to increase prices in response to added compliance costs without engendering a reduction in industry sales and an increase in the level of excess capacity.

The results of this study are not nearly as encouraging for potential entrants. Yet there may be a number of actions new firms can take to reduce

some of the barrier effects. Potential entrants may be able to overcome learning curve barriers by hiring knowledgeable employees, taking advantage of technical and legal consultants, and using programs offered by trade associations, regulatory agencies, and environmental groups. In certain situations, entrants may also be able to outsource their waste disposal and treatment activities, thereby avoiding some of the diseconomies of small-scale abatement.

From a public policy perspective, this study sheds some light on the complex interactions between regulations and the competitive dynamics of firms. Because new entry is often associated with heightened competition and the price and profit disciplining of markets (Scherer & Ross, 1990), it appears that environmental regulations may have the socially undesirable consequence of decreasing competition. The deterrent effect of environmental regulations may add to their social costs by inhibiting competitiveness, but the present results do not at all imply that these costs exceed the social benefits of regulations. Nonetheless, public policy makers need to consider the impact of environmental regulations on the competitive dynamics of markets.

Although this study provides new insight into the relationship between environmental regulations and new firm entry, the results should be considered preliminary, and many more questions need to be answered. The results indicate a deterrent effect of environmental regulations, but do not provide evidence regarding the mechanisms by which this impact operates. Research that investigates the source of this effect appears to be warranted. In addition, this research focused exclusively on manufacturing industries. The generalizability of the results to agricultural, construction, and other industries is unknown. Another important consideration is the impact of environmental regulations on new firm entry in specific industries—notably, pollution abatement equipment industries—in which environmental regulations may encourage rather than deter entry. The identification of heightened entry barriers also raises the possibility of increased profitability for certain firms. The net impact of regulations on incumbent profitability is an unresolved issue.

Finally, a fundamental question is how the relationships discovered herein have held up over time, and future research is needed to address this question. One possibility is that environmental regulations have permanently altered the structure of pollution-intensive industries and that the barrier effects will persist. Another possibility is that the large quantity of regulations enacted in the 1970s introduced temporary uncertainty that accounted for the present results. If this were the case, entry barrier effects might have dissipated over time. Reinforcing this conclusion, advances in pollution abatement technology and the proliferation of environmental consulting and service-oriented firms in recent years may have lessened the burden on potential entrants. But the fact that legislators and regulators have continued to enact increasingly complex and stringent new environmental regulation (Greene & Robinson, 1992) diminishes the likelihood of this pos-

sibility. To the extent that the regulatory system continues to exhibit instability, uncertainty is renewed, and the barrier effects found in this study would be expected to persist.

The findings of the present study will, we hope, serve as a valuable basis for future explorations into the relationship between environmental regulations and the competitive dynamics of industries. Our results indicate that firms may need to reconsider the strategic implications of environmental regulations, and it appears that further research in this area will prove very instructive.

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Robert L. Brown is a doctoral student in strategic management at the University of Tennessee, Knoxville. His research interests include the influence of top management teams and strategy on organizational effectiveness; pollution and other types of environmental performance issues; and entrepreneurship.

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ARTICLES

Typing

Submit five copies of the manuscript; be sure that they are good, clear copies and that each copy includes all pages. The manuscript should be typed on standard-sized (8½" × 11") paper and double-spaced throughout—including footnotes, references, appendixes, tables, and figures. Only upper- and lowercase type of ordinary size and density should be used: no bold or extra large or small type. Type on only one side of the paper, and use wide margins (one inch or more) at top, bottom, and both sides of each page. There is no absolute limit, but the length of articles should not ordinarily exceed 30 manuscript pages, including references, appendixes, tables, and figures.

Title Page, Abstract, and Page Numbering

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Institute for Management and Labor Relations

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Acknowledgments

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Footnotes

Footnotes should be used sparingly. Minimize their use for parenthetical discussion; material that is pertinent can often be integrated into the text.

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Main headings should be used to designate the major sections of an article; three or four main headings should be sufficient for most articles. Initial headings, such as "Introduction," are unnecessary. Main headings should be centered on the page and typed in all capitals. Example:

METHODS

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Manager sample. Respondents consisted of a random sample of 300 managers. . . .

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Useful tables and figures do not duplicate the text; they supplement and clarify it. Because tables and figures are considerably more expensive to prepare for publication than text, the degree to which they add to the impact of an article should be considered carefully.

Each table should be typed, double-spaced, on a separate page. Tables should be grouped following an article's appendixes. (If there is no appendix, tables follow the references.) Each table should have the word TABLE (typed in all caps) and its number (arabic numerals) centered at the top. The table's title should be in capital and small letters and centered on the page directly under the table number. Example:

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Results of Regression Analysis

Tables should be numbered consecutively from the beginning to the end of the article. A table's position in a manuscript should be indicated in the text as follows:

Insert Table 2 about here

For most articles, the first table should report descriptive statistics, including means, standard deviations, and a complete correlation matrix. These statistics should have two decimal places and decimal points. Correlations should fill the lower left corner of the page.

Each table should report the results of one type of analysis. Headings should be ranged across the top of the table. No new headings should appear in the body of the table. Complete names of variables—not abbreviations or computer code names—should be used.

If it is necessary to distinguish some numerals in a table from others (for example, to indicate which factor loadings define a factor), boldface type can be used. In the manuscript, underline a numeral that should be set bold with a wavy line. This possibility should not be used when other conventions, such as footnotes, are sufficient.

Footnotes to tables are of two types:

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Figures are illustrations, not tables. Authors should be prepared to supply finished camera-ready artwork for all figures at the time the manuscript is accepted for publication. The spacing and lettering used in figures should allow for the possibility that they will be reduced in size by as much as 50 percent so that they will fit the size of the *Journal's* page. Figures should be numbered and titled like tables (see above) and grouped after the tables in a manuscript. Each figure's position in the article should be indicated in the same way as each table's position.

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An alphabetically ordered list of the references cited in the text should be included at the end of an article. References should begin on a separate page headed REFERENCES. Continue the pagination.

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Several studies (Adams, 1974; Brown & Hales, 1975, 1980; Collins, 1976a, 1976b) support this conclusion.

Note the use of alphabetical order and ampersands in citations.

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Kahn, R. L., & Boulding, E. (Eds.). 1964. Power and conflict in organizations. Glencoe, IL: Free Press.
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Unpublished papers, dissertations, and presented papers should be listed in the references using the following formats:

Duncan, R. G. 1971. Multiple decision-making structures in adapting to environmental uncertainty. Working paper no. 54–71, Northwestern University Graduate School of Management, Evanston, IL.

Smith, M. H. 1980. A multidimensional approach to individual differences in empathy. Unpublished doctoral dissertation, University of Texas, Austin.

Wall, J. P. 1983. Work and nonwork correlates of the career plateau. Paper presented at the annual meeting of the Academy of Management, Dallas.

Appendices

Lengthy but essential methodological details, such as explanations of long lists of measures, should be presented in an appendix or appendixes. The material should be presented in as condensed a form as possible but not in a table format. A single appendix should be titled APPENDIX, typed in all caps; multiple appendixes are titled and ordered alphabetically: APPENDIX A, APPENDIX B, etc.

Biographical Sketches

At the time an article is accepted for publication, a brief biographical sketch of 50 words or less should be submitted for each author. It should indicate where the highest degree was earned, present position and affiliation, and current research interests. Example:

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Research notes contain brief descriptions of original research. To be considered for the Research Notes section, manuscripts should not exceed 15 double-spaced typewritten pages in length. A manuscript intended for this section should be prepared according to the instructions for articles, except that the abstract should not exceed 50 words in length.

GENERAL USAGE

Avoidance of Sexist and Other Biased Language

Authors should avoid terms or usages that are or may be interpreted as denigrating to ethnic or other groups. Authors should be particularly careful in dealing with gender, where long-established customs, such as the use of "he" as a generic pronoun ("a manager . . . he"), can imply gender-based discrimination. Using plural pronouns—changing the "client . . . he" to "clients . . . they"—is preferred.

Use of First Person

Vigorous, direct, clear, and concise communication should be the objective of all articles. Use of the first person and the active voice can further that objective.

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Although there is a substantial literature on both alliances and networks, it is currently quite fragmented and disjointed. In part, this stems from different historical traditions among the North American, Japanese, and Western European literature. For example, Japan has a relatively long tradition of network integration, including linking firms into large conglomerate-like systems and quasi-integrating networks from suppliers to customers. Many companies in North America and Western Europe, however, have recently developed networking as an important strategy. The fragmented nature of the literature is also influenced, in part, by a variety of theoretical and disciplinary perspectives taken on these elusive entities. For instance, while some scholars may see alliances and networks as strategic new forms of organizing, others suggest that they are simply different tactical mechanisms used by established organizations to obtain needed resources.

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Contributions could stress managerial, strategic, or organizational implications of a variety of networks and alliances for different collections of organizations. Analyses might concentrate on how effects stemming from different interorganizational modes of cooperation are altered by a number of organizational conditions, group processes, and individual factors.

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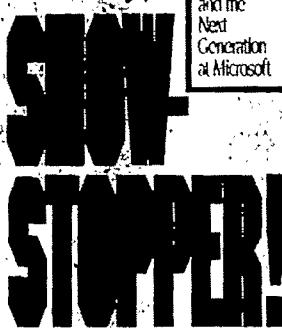
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Special Research Forum: International and Intercultural Management Research

International and Intercultural Management Research: What's Next?
P. Christopher Earley and Harbir Singh

Overcoming the Liability of Foreignness
Srilata Zaheer

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Sea Jin Chang

**New Trends in Rewards Allocation Preferences:
A Sino-U.S. Comparison**
Chao C. Chen

Research Note

Role Conflict, Ambiguity, and Overload: A 21-Nation Study

Mark F. Peterson, Peter B. Smith, Adebawale Akande,
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The *Academy of Management Journal* (ISSN 0001-4273) is published by the Academy of Management six times a year in February, April, June, August, October, and December. The address of the office of publication is Academy of Management, Pace University, P.O. Box 3020, 235 Elm Rd., Briarcliff Manor, NY 10510-8020.

Subscription rates for *AMJ* only: in U.S., Mexico, and Canada, \$65 for one year, \$123.50 for two years, \$175.50 for three years. Rates for overseas: \$75 for one year, \$142.50 for two years, \$213.75 for three years. All payable in U.S. dollars. Subscriptions and orders for back issues should be sent to Academy of Management, Pace University, P.O. Box 3020, 235 Elm Rd., Briarcliff Manor, NY 10510-8020. For membership information, call the Academy of Management business office, (914) 923-2607, fax (914) 923-2615.

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Printed in the United States. Typesetting, presswork, binding, and mailing by The Sheridan Press, Hanover, PA.

Academy of Management Journal, Publication No. 900920.

Second class postage is paid at Briarcliff Manor, NY, and additional offices.

POSTMASTER—Send address changes to *Academy of Management Journal*, Pace University, 235 Elm Rd., P.O. Box 3020, Briarcliff Manor, NY 10510-8020.

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FROM THE EDITOR

Here is another short note, pointing out that we have, in our hands, the second special research forum during my term as editor. This one was also begun under Mike Hitt and completed under my editorship, and the procedures we followed here were essentially the same as those I described for the forum in the previous issue. This one, though, presented special challenges since many of the papers, as well as many of the reviewers, came from around the world, and both Chris and Harbir deserve our thanks and admiration for getting it done.

On a different note, everyone has figured out by now that our colors for this year are shades of scarlet. I can't wait to see how it goes as the year progresses. Finally, I can't help but note that in this issue we have set, I think, the *AMJ* record for the paper with the most co-authors. Imagine what it was like to get all of them to sign the copyright!

Angelo DeNisi

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INTERNATIONAL AND INTERCULTURAL MANAGEMENT RESEARCH: WHAT'S NEXT?

P. CHRISTOPHER EARLEY
University of California, Irvine

HARBIR SINGH
University of Pennsylvania

The 1994 Special Research Forum on International and Intercultural Management Research represents an effort to create a better understanding of problems and opportunities in international and intercultural research. Our focus in this forum is to advance international and intercultural research through the presentation of outstanding work using sophisticated new methodologies and research styles to address questions of global business. In our introductory comments, we define international and intercultural research and present a conceptual framework for understanding trade-offs that arise in conducting international research. Next, we describe a number of new avenues for international and intercultural management research. Finally, we give an overview of the articles included in this forum and integrate them into our general framework.

As the traveler who has once been from home is wiser than he who has never left his own doorstep, so a knowledge of one other culture should sharpen our ability to scrutinize more steadily, to appreciate more lovingly, our own.

—Margaret Mead, *Coming of Age in Samoa*

For many obvious reasons, organizational researchers have stretched their efforts across national and cultural boundaries. Pragmatic desires to enable organizational practitioners to manage more effectively have driven some of these efforts. How can American managers better negotiate with their Japanese counterparts? How should U.S. firms structure their joint ventures in mainland China? Like much early management research, exploration of these questions sought immediate answers with a practical focus. A curiosity about "how they do things over there" has also driven interna-

We would like to thank Elaine Mosakowski, Anne Tsui, and Thomas Malnight for their comments on an earlier draft of this introduction. In addition, we extend special thanks to all the reviewers for the special forum for their hard work and assistance. In the course of this effort, we drew upon the expertise of reviewers from many different fields in and outside of management and from a dozen different countries throughout the world. Without their efforts, patience, and perseverance, this forum would not have come to pass. Finally, C. J. Farrar provided invaluable administrative assistance in coordinating reviews, tracking recalcitrant authors and reviewers, and providing ample aspirin to the first author.

tional and intercultural research. Extensive work in the field of international management has developed important constructs associated with corporate operations across borders. This work has various streams, such as foreign direct investments, the structure and management of multinationals, and the cultural challenges presented by management across borders.

It is not possible to review this extensive literature in this introduction, but we refer to some of the work for illustrative purposes. For instance, the significant foundation of international and intercultural research in management can be traced to such early comparative work as Haire, Ghiselli, and Porter's (1966) study of managerial values. The focus of these early studies was uncovering the nature of the values and beliefs that existed in various countries. An important variation on this approach is the now classic study of Hofstede (1980) in which he sampled the values of organizational members from over 40 countries. His initial empirical analyses showed a four-part typology of cultural dimensions, and his subsequent research (Hofstede, 1993; Hofstede & Bond, 1988) yielded an additional characteristic denoting time and fate in society. This work is extended by the article by Chen in this issue, and it is also related to the articles by Janssens, Brett, and Smith and by Peterson and colleagues.

A large body of work on patterns of foreign direct investment by multinational corporations was initiated by Hymer (1960, 1976); work on oligopolistic competition between firms by Caves (1982), Kindleberger (1969), and Knickerbocker (1973) and Vernon's (1966) work on the international product cycle followed. Scholars including Buckley and Casson (1976), Hennart (1982), and Rugman (1981) have offered theoretical explanations for the existence of multinational corporations, and Kogut (1983) presented an options view of foreign direct investment. His approach, which characterizes the investments multinational firms make as a series of sequential decisions that determine the flow of their resources across countries, emphasizes a learning-based perspective on the evolution of the multinational corporation. The article by Chang in this special issue reflects Kogut's approach.

Another area of work in an international and intercultural context is the study of administrative processes within multinational firms (e.g., Franko, 1976; Stopford & Wells, 1972), and Perlmutter (1969) studied challenges to the evolution of multinational corporations. More recently, scholars have examined issues including choices in strategy, structure, and administration and human resources management practices and policies (e.g., Arvey, Bhagat, & Sales, 1991; Bartlett, 1979; Bartlett & Ghoshal, 1989; Black, Gregerson, & Mendenhall, 1992; Boyacigiller, 1990; Doz, 1976; Hedlund, 1986; Prahalad, 1976; Schuler, Dowling, & De Cieri, 1993; Tung, 1981). These works have addressed multinationals' choices in structure and administrative process, explicitly recognizing the pressure they face in responding to local (national) pressures while pursuing strategies that leverage corporate capabilities across national borders. Recent work on the process of globalization (Malnight, 1995) extends this line of research. In a related vein, research has compared the pressures for local isomorphism against parent corporation

influences on managerial practices in various subsidiaries (e.g., Ghoshal & Nohria, 1989; Rosenzweig & Nohria, 1994; Westney, 1993). This work is extended by Zaheer's work in this issue.

More recently, an interest in improving understanding of fundamental theories of management and a convergence with research on international management has driven international and intercultural research. These studies are not necessarily sweeping or grand, nor do they necessarily propose universal laws of behavior, typologies of organizational form, and the like. What they attempt is something much more difficult: to shift the motive of international and intercultural research from curiosity to achieving an enlightened understanding of how management and organizational phenomena relate to cultural and national characteristics. Is it meaningful to develop models that fail to generalize outside of the United States? Can researchers learn invaluable lessons by better understanding the boundaries of our endogenous theories?

Although interest in understanding the practical and comparative aspects of international and intercultural research has stimulated a movement having cyclopean inertia, it is the desire to enhance knowledge of fundamental theory that will fuel the sustained contribution of international and intercultural research in the field of management. The intent of this special research forum is to highlight outstanding research on international and intercultural management. We hold these articles up as examples for researchers who generally work on questions defined in a domestic context and intend to begin working on issues in an international and intercultural context. Research in the area of international management, broadly defined, has explored many issues related to comparative management, foreign direct investment, and the competitiveness of firms across national borders. We hope that readers of this journal will have an opportunity to see how the research designs of the works presented herein hold true to their particular international contexts while maintaining a high level of rigor.

In the next section, we provide a general framework with which to understand and classify international and intercultural management research and use this framework to highlight exemplary research that furthers knowledge of fundamental theories of organizations.

BACK TO BASICS: INTERNATIONAL, INTERCULTURAL, AND OTHER TYPES OF FLYPAPER

The American Heritage Dictionary (1986) defines nation as, "A people who share common customs, origins, history, and frequently language; nationality," and an oft-cited definition of culture is, "Culture consists of patterns, explicit and implicit of and for behavior acquired and transmitted by symbols, constituting the distinctive achievement of human groups, including their embodiment in artifacts" (Kroeber & Kluckhohn, 1952: 181).

Extending the cited definitions to the realm of international and intercultural management research implies that researchers are dealing with the

systems of a given group of people (international) relevant to a work organization and the characteristic values, beliefs, and ways of acting shared by a group of people (intercultural). These definitions point to an overlooked aspect of this research field, namely, that the key variable in both cases is the shared aspect of human action and institution. When researchers contrast how organizational forms manifest themselves in market and planned economies or how reward allocation systems operate in individualistic and collectivistic cultures, what they are really assessing is the generalizability and universality of a given organizational model across multiple, shared systems of meaning, belief, and action. The outcome of such an examination is a more fundamental understanding of organizational phenomena.

We use these definitions as a basis for describing a number of research forms that exist in the management literature. These forms are based on two dimensions: relevance to international management and relevance to intercultural management. The differences between the dimensions are often attributed to level of analysis, but we argue that the differences can be thought of stemming from examining whole systems rather than their components. As we use the term, a system is a naturally occurring set of individuals, organizations, and institutions that coexist and are interdependent. The international dimension embraces the examination of a cultural or national system as a gestalt, whereas the intercultural dimension embraces the component relationships within the cultural system. We propose a four-part categorization that might classify existing research and guide future work.

Four Research Approaches

Unitary form. In this instance, a researcher is neither concerned with cultural or national systems nor reductionist from a comparative perspective; rather, emphasis is placed on a single instance of a phenomenon. This style of research is similar to what others have labeled "emic" (e.g., Berry, 1990) or "pseudo-emic" (e.g., Earley & Mosakowski, 1995). By emic, we mean that the emphasis is on understanding a single cultural group or nation on its own terms and using its own constructs. Anthropological field work is often cited as an example of what we term a unitary form (Mead's [1928] classic assessment of Samoan culture is an example), and in an organizational context, Barley (1990) presented exemplary work of this type in his assessment of the technology industry. Although this type of research is very important for understanding given groups, it does not provide an opportunity to establish universal principles, assuming such universals exist.

Gestalt form. In this style of research, the emphasis is on examining a system as a whole rather than on breaking it apart. The gestalt form has several features. First, relationships among variables are examined as they occur across different cultural or national systems. Second, constructs and hypothesized relationships are derived from general principles rather than from the systems themselves. Third, interpretations of findings from a given cultural or national system must be developed with reference to specifics of

the system. These interpretations inform the researcher as to the universality of a given principle.

Lincoln, Hanada, and McBride's (1986) discussion of organizational structures in Japan demonstrates this research form. First, they used American organizational structure as a comparator for interpreting many of their observations. Second, although their focus was primarily on Japanese organizations, their conceptual orientation reflected organizational theory evolved from other cultural systems (predominantly the United States) in order to explain their observations concerning Japan. Third, they interpreted a number of their findings, such as those concerning relationships among interdependent companies within a *keiretsu*,¹ within the context of how organizations operate in Japan. Erez's (1986) study of three industry sectors within Israel is a micro example of this style of research. This study examines the relationship of performance and several goal-setting strategies in the kibbutz, Histadrut,² and private sectors within Israel. Erez's conceptual framework is based on an imported motivation model (goal setting), but her interpretation of various findings is based on an examination of each of these three sectors with reference to one another as well as the United States.

Although the gestalt form shares features with the unitary form, there are several differences. For instance, constructs used in the gestalt form do not necessarily emerge from a researcher's interaction within a system. Also, it is not assumed that a system can only be understood on its own terms. With the gestalt form, understanding comes from explicit comparisons with similar systems in different, larger contexts (e.g., nations). It is important to emphasize this comparative aspect of the gestalt form since the unitary form also examines gestalts, but without the comparative dimension.

Reduced form. The reduced form emphasizes breaking a system down into components in order to better understand the functioning of processes within it. Several features characterize this form. First, the system itself can be separated into components. Second, relationships in the system can be studied away from other relationships in the cultural system. Third, constructs and hypothesized relationships are typically derived from other systems, cultures, or nations. Fourth, relationships are not interpreted in terms of the overall system in which they are embedded; rather, they are interpreted in terms of specific aspects of the system.

A study by Tornblom, Jonssons, and Foa (1985), who examined the reward allocation preferences of Americans and Swedes, exemplifies the reduced form of research. They hypothesized that the strong collectivist orientation characteristic of Sweden would result in preference for an equality-based reward allocation rule, and the strong individualist orientation of the United States would favor an equity-based rule. Their findings strongly supported their hypotheses. From our perspective, their study illustrates the

¹ Keiretsu are horizontally connected groups of Japanese businesses.

² Histadrut is the nationally organized labor union of Israel.

reduced form because they examined a specific process (reward allocation) with regard to a specific feature of the system (individualism versus collectivism). In this case, the cultural dimension of individualism/collectivism functioned as a moderator variable in determining reward allocation preferences.

There are several differences and similarities among the reduced and the unitary and gestalt forms. First, unlike the users of other approaches, those taking the reduced approach assume that individual relationships are meaningful taken out of context. Second, it is assumed that out-of-context relationships can be placed back into a complex cultural system without loss of meaning. As in the gestalt form, theoretical relationships are typically arrived at deductively and are based on general principles researchers observe in various cultural systems.

Hybrid form. The hybrid form is an approach that utilizes aspects of both a gestalt and a reduced perspective. The features of the hybrid form are as follows: first, in developing research questions, researchers study gestalt systems to identify their important aspects. Second, hypothesized relationships are derived across systems and are not necessarily unique to a given system. Third, constructs and relationships are assumed to be separable from the system in which they are embedded, but the mapping back onto an existing system may not be simply linear or additive. Fourth, specific relationships are interpreted in terms of reduced parts of the system but with reference to the general system. These interpretations can, in turn, lead to a further refinement of general principles.

An interesting example of this style of research is Van Maanen and Barley's (1984) assessment of occupational communities. Although their work is primarily conceptual, the inferences drawn from prior empirical work illustrate the complementary mixing of ethnographic observation, conceptualizations derived from within a given system extended onto other systems, and the development of a general theoretical model that captures general principles across many systems. For instance, the authors examined a number of occupational systems through an intensive immersion in order to thoroughly understand why individuals within the system behaved as they did and the nature of each community's social structure. Next, they took those observations and combined them in order to understand the patterns of actions across multiple communities and applied several theoretical perspectives in discussing these observations. An additional example is Schwartz and Bilsky's (1987) study, in which they develop a typology of cultural values. These authors applied a conceptual model of values, motives, and beliefs derived from existing research on personality theory in a number of countries to the derivation of universal dimensions of culture. They used this model to establish universal values by viewing the values as cognitive representations of three universal requirements—biological needs, interactional requirements for interpersonal coordination, and social demands for group survival—following the hybrid assumption of separability. Categories of universal values are in turn separately assessed in Germany

and Israel. In addition, some of the work on foreign direct investment and strategy and structure in multinational corporations has the characteristics of the hybrid form.

Our four-part classification of research approaches is not meant to imply a universal rank-ordering or a preference structure. Further, each form has its own unique strengths, and none should be viewed as inherently superior to any other form. The crucial question is one of appropriateness for the task at hand.

The Evolving Nature of International and Intercultural Research

Our proposed framework implies several important challenges for international and intercultural management research. First, the impetus for many international and intercultural studies is the researchers' desire to make accurate outcome predictions in various countries and cultural settings. In this instance, the gestalt form, whether applied to the culture or nation in which a study is conducted, captures the potential for generalizability. By using a model in various nations, a researcher can assess when the model does and when it does not enable the making of good predictions. But outcome prediction and generalizability are not the only criteria of good theories. As researchers continue to generalize their models, they also need to provide explanations for observed phenomena. Thus, the critical question shifts from "Will it work here?" to "How and why does it work?"

Second, refinement of the distinction between the constructs of nation and culture is necessary as this distinction is critical to understanding many of the present deficiencies in management research. As we suggested earlier, some studies seek to identify differences in organizational practices among nations in a gestalt fashion. Such research questions take the form, "Do Americans and Japanese allocate rewards differently?" After finding differences, researchers often initiate post hoc explanations using cultural dimensions using a reduced form of interpretation. Such a research style is characteristic of micro research in which the focus is typically a process explanation of phenomena. Take, for example, a researcher who conducts a comparative study of negotiation behavior and uses country of origin as an explanatory device ("Americans prefer an equity-based distribution of outcomes, whereas the Chinese prefer an equality-based based distribution"). We would categorize the researcher's approach as a reduced form. However, researchers need to be concerned with the "why" and not just whether or not differences exist.

Evoking national and cultural explanations for the existence of similarities or differences enables researchers to better understand their research only if the similarities and differences are an integrated aspect of their theoretical frameworks. With a hybrid form, the key to developing a meaningful model is understanding how and why differences exist vis-à-vis nation or culture rather than just identifying differences. In our reward allocation example, different allocation preferences may be attributable to any one of many explanations, including differences in economic situation

("Americans allocate rewards based on national exchange practices") and legal context ("Americans allocate rewards according to legal statutes in the labor context"), rather than to cultural values ("Americans believe that people should be rewarded on a basis of equity because they think that it is right and just"). A compelling hybrid form attempts to understand which alternative explanation accurately captures people's allocation decisions by identifying how specific aspects of nation or culture are related to a given explanation. In this sense, the reliance on nation or culture as a "black box" is abandoned in favor of a more precise specification of theoretical relationships. An investigator can, for example, conduct international management research on the choice of foreign direct investment or parent-subsidiary structures without evoking a cultural explanation (shared values), and generate a thorough understanding of the society's inner workings, provided that adequate understanding of the country's legal, economic, and political environment is generated.

Although a reduced approach to studying international and intercultural issues can be useful, it is by no means a mandated research style. In many cases, research questions preclude use of such a style. For example, researchers examining the M-form of organizational structure cannot necessarily reduce their use of a national context to a single dimension of culture or a legalistic parameter of corporate law. The complex milieu of nation or culture may not be properly reduced to quasi-independent dimensions or facets (Resaldo, 1989).

International and Intercultural Management Research: What's Next?

The hybrid form is the most promising approach for international and intercultural research for a number of reasons. First, if we return to the early impetus for this type of research, gaining a pragmatic understanding of how things are done in various countries, both the hybrid and gestalt approaches will do an adequate job, although the gestalt is not well suited for understanding processes underlying, and embedded in, a system. Second, the reduced approach is useful for analyzing relationships that are inherently discrete or divisible, but it is less useful for exploring complex relationships that are highly interdependent or context-specific. Again, the hybrid form enables a researcher to overcome this limitation. In the past decade, there has been an increasingly widespread call for more qualitative types of research. In many regards, this emerging emphasis suggests that researchers want a better understanding of the gestalt of a given phenomenon, and the hybrid form provides this opportunity.

We present five articles in this forum that are exemplary studies of international and intercultural research using a hybrid form. In the first, "Overcoming the Liability of Foreignness," Srilata Zaheer explores whether firms face inherent costs when doing business in different countries. Writing theoretically, the author extends the notion of the liability of newness to the domain of new operations in different parts of the world. When faced with new environments, firms tend to transfer key internal capabilities to provide

their international units with firm-specific advantage. The article thus explores whether units of multinational corporations in different countries use imported practices that are specific to their organizations or mimic the organizational practices used in the countries they operate in to overcome the liability of foreignness. Zaheer contrasts arguments from the literature on foreign direct investment, emphasizing the transfer of capabilities from parent firms to distant units, with institutional theory-based arguments that suggest a strong local influence on the practices of the foreign units of multinationals. A great strength of the study is the author's choice of context, the foreign exchange trading rooms in major multinational banks, where competitive advantage is developed and sustained through a unit's organizational practices rather than through its products. By studying 13 New York-based foreign exchange trading rooms of Japanese banks and 15 Tokyo-based trading rooms of Japanese banks, the author can focus on what are essentially stand-alone operations in each country. Since foreign exchange services are relatively undifferentiated, the author can compare the influences of local practices and those of a parent multinational controlling for a possible confounding factor, differentiation. The study's dependent variable—differences in the profits per trader in home and foreign trading rooms—reflects a precise understanding of how the industry measures performance and is applicable in both countries studied. The results provide evidence of both the transfer of internal capabilities and local isomorphism. Overall, there is evidence of a liability of foreignness, and it seems that the foreign subsidiaries of multinationals are better off emphasizing routines used in their parent firms' home operations than attempting to mimic practices of their rivals in the local market. This article is a good illustration of a test of broad theory in a cross-national context through a very careful choice of industry and participant firms enabling the power necessary to test the theory. An important feature of the article is the care taken to make the problem tractable without losing the richness of the theory being tested.

The second article, "Confirmatory Cross-Cultural Research: Testing the Viability of a Corporation-Wide Safety Policy," by Maddy Janssens, Jeanne M. Brett, and Frank J. Smith, represents a powerful new approach to analyzing international and intercultural data. The authors examine a model of industrial safety implemented by a multinational company having plants operating in the United States, France, and Argentina, using comparative industrial relations theory as the basis for the specific model tested in their field data. This study has several noteworthy aspects. First, the authors describe critical cultural aspects of the nations studied that would differentially influence their industrial safety models. Rather than conduct strict comparative work, they derive research hypotheses using a theory-driven model of safety practices, expressed management concern, and societal context. Second, the study uses a powerful statistical method, multisample analysis in structural equation modeling, which holds much promise for analyzing the complex data sets often obtained in international field research. Finally, the authors chose to study a perceptual outcome, employee percep-

tions of safety. A cynic might argue that such an approach is methodologically weak or subject to bias. However, perceptual outcomes are useful in that they provide a direct connection to cultural values, whereas a behavioral outcome, such as rate of industrial accidents, will likely reflect organizational practices not tied to culture per se.

The third article, "International Expansion Strategy of Japanese Firms: Capability Building Through Sequential Entry," by Sea Jin Chang, explores the process of Japanese electronics firms' entries into the United States during the years 1976–89. Chang suggests that firms develop capabilities in foreign countries through sequential moves that build upon the results of prior exploratory moves, an argument developed in the international management literature through the works of others, including Johanson and Vahlne (1977), Davidson (1980), Kogut (1983), and Kogut and Chang (1991). Linking the new resource-based view of firms in the strategy field and prior work on foreign direct investment in the international management field, Chang proposes that firms expand their investments and add new lines of business after learning from their prior experience in a country. The research shows that Japanese firms first enter the U.S. electronics industry in lines of business in which they have some competitive advantage over local firms. After thus developing their operations in the United States, these firms begin to expand into the lines of business that are their next strongest in terms of advantage over local firms. The study thus demonstrates a learning-based argument about how firms accumulate capabilities in foreign countries. This article ties in well with Zaheer's contribution to this special research forum in showing that parent firms tend to transfer capabilities to local operations in response to the challenges of setting up foreign operations.

In our fourth article, "New Trends in Rewards Allocation Preferences: A Sino-U.S. Comparison," Chao C. Chen examines a well-researched topic but gives it a new twist. Using a role-playing exercise, Chen explored changes in Chinese and American managers' preferences for reward allocations linked to the dramatic reforms and changes that have occurred in the world. In his results, which are counter to prevailing wisdom, the Chinese prefer differential reward rules and are more economically oriented than the more humanistically oriented Americans. He also reports that the Americans in his study preferred an allocation rule based on equality for socioemotional rewards and a performance-based rule for economic rewards. The most notable feature of Chen's work is that he provides the reader with a careful analysis of traditional and modern Chinese society as a basis for his predictions concerning reward allocation preferences. Although role playing has been used elsewhere in international management research, Chen thoroughly describes his approach, explaining nuances of analysis and adaptation of his instruments. Another important feature of Chen's work is that he addresses an important rival explanation for his findings in the concluding section, namely, that the pattern he observed in his Chinese sample may reflect an artifact of his manipulation. Although his explanation may pro-

voke some debate, such candid discussion is healthy for international management research.

Finally, "Role Conflict, Ambiguity, and Overload: A 21-Nation Study," by Mark F. Peterson, Peter B. Smith, Adebowale Akande, Sabino Ayestaran, Stephen Bochner, Victor Callan, Nam Guk Cho, Jorge Correia Jesuino, Maria D'Amorim, Pierre-Henri Francois, Karsten Hofmann, Paul Koopman, Kwok Leung, Tock Keng Lim, Shahrenaz Mortazavi, John Munene, Mark Radford, Arja Ropo, Grant Savage, Bernadette Setiadi, T. N. Sinha, Ritch Sorenson, and Conrad Viedge, reflects a different type of innovation that we seek to encourage. Our listing all the study's authors may seem burdensome, but it emphasizes the unique aspect of this work, namely, that the authors, with Peterson and Smith as primary coordinators, formed an extensive research network. Although a few other international and intercultural management studies have used such an extensive database (e.g., Hofstede, 1980), we can identify only one other study that has so directly involved participants from around the world (the ongoing leadership study being conducted by Robert House at the University of Pennsylvania). The purpose of the 21-nation study reported here is an examination of well-researched constructs, role conflict, ambiguity, and overload, but its broad international collaboration is distinctive, as is its multilevel statistical analysis at the individual and national levels, an analysis only possible given the number of countries represented in the data set.

CONCLUSIONS

Where has our exploration left us, and what lessons might be taken away from the Special Research Forum on International and Intercultural Management Research? First, we intend for our forum to highlight one of a number of possible future directions for the field of international and intercultural management research, not the direction for it. We focus on research characteristic of what we have labeled the hybrid approach, which combines a comprehensive overview of the systems in which firms operate with examination of specific inner workings of the systems themselves. Although the hybrid approach is promising, other approaches are promising as well.

Second, these articles show that international management research can be theoretically compelling and methodologically rigorous. They demonstrate unique approaches that others can use as models for conducting their research. No longer should scholars make the excuse that international research is high risk or lacking rigor, because good research can be conducted in an international or intercultural context.

Finally, and most important, there has been confusion concerning the roles of culture and national context. The intent of our special forum is not to argue that all international research should focus on cultural values or culture per se. Nor do we intend to discount the work of researchers who focus on comparative management practices. Rather, we suggest that the

field integrate its working definitions of nation and culture and create an understanding based on various facets of nations and cultures, including economic, legal, cultural, and political systems. The key to conducting quality international or intercultural management research is to understand the contexts in which firms and individuals function and operate. However, underlying the legal context of a society is its culture. Thus, a researcher should neither entirely rely on nor ignore any aspect of a country. Effective hybrid research emphasizes understanding all major systems in a given nation rather than a focus on some to the detriment of others. We consider the articles in this forum to illustrate a joint focus on nation and culture and both micro and macro views of organizational phenomena and society.

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OVERCOMING THE LIABILITY OF FOREIGNNESS

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This study addressed the question of whether firms in a competitive, globally integrated environment face a "liability of foreignness" and to what extent either importing home-country organizational capabilities or copying the practices of successful local firms can help them overcome this liability. Predictions were tested with a paired sample of 24 foreign exchange trading rooms of major Western and Japanese banks in New York and Tokyo. Results support the existence of a liability of foreignness and the role of a firm's administrative heritage in providing competitive advantage to its multinational subunits. They also highlight the difficulty firms face in copying organizational practices from other firms.

Researchers in international business have long theorized that multinational enterprises (MNEs) doing business abroad face costs (Hymer, 1976; Kindleberger, 1969) arising from the unfamiliarity of the environment, from cultural, political, and economic differences, and from the need for coordination across geographic distance, among other factors. This liability of foreignness has been the fundamental assumption driving theories of the multinational enterprise (Buckley & Casson, 1976; Caves, 1982; Dunning, 1977; Hennart, 1982). Further, it has been argued that to overcome the liability of foreignness and compete successfully against local firms, MNEs need to provide their overseas subunits with some firm-specific advantage, often in the form of organizational or managerial capabilities (Buckley & Casson, 1976; Caves, 1982; Dunning, 1977; Hennart, 1982). Resource-based views of strategy (Barney, 1991; Lippman & Rumelt, 1982; Winter, 1991) have also stressed the importance of firm-specific resources and organizational capabilities in providing sustainable competitive advantage to firms. These theories suggest that multinationals' subunits will try to overcome the liability of foreignness by importing capabilities embodied in the organizational practices of their parent enterprises, particularly if the subunits are competing in an undifferentiated product market in which other sources of imported competitive advantage, such as a brand name, a superior technology, or factor-cost advantages, have little role to play.

I thank Kathleen Sutcliffe, Andrew Van de Ven, Akbar Zaheer, and two anonymous reviewers for comments on earlier versions of this article. This study was supported in part by the International Financial Services Research Center at the Sloan School of Management, Massachusetts Institute of Technology.

Drawing from institutional theory (DiMaggio & Powell, 1983; Scott, 1987; Zucker, 1988), however, writers in international organization theory (Powell & DiMaggio, 1991; Rosenzweig & Nohria, 1994; Rosenzweig & Singh, 1991) have argued that MNE subunits are most likely to attend to the demands of their local, host country environments and that their organizational practices will tend to become similar, or isomorphic, to the practices of local firms. In particular, institutional theory would lead one to predict that, if local firms are the best-performing exemplars in the immediate local environment of an MNE subunit, it will attempt to mimic their organizational practices in its bid to better its performance (DiMaggio & Powell, 1983).

The puzzle that emerges from these two theories is this: If in fact MNE subunits face a liability of foreignness, does importing firm-specific organizational practices or imitating local organizational practices better help them overcome this liability and compete successfully against purely local firms? This is the question addressed here and tested in an industry context in which organizational capabilities, rather than product differentiation or product-market fit considerations, provide an important source of competitive advantage.

I addressed this research question by studying one industry, foreign exchange trading, in depth through observation, interviews, and multiple-respondent surveys conducted in a paired sample of the trading rooms of a set of U.S. and Japanese banks in New York and Tokyo. I defined local trading rooms as those in banks that were substantially owned by individuals or firms from the country in which the rooms were located and foreign trading rooms as those in banks that were substantially owned by individuals or firms from countries other than the country of the trading rooms' location. Specific organizational practices on which the Western trading rooms in New York differed most from the Japanese trading rooms in Tokyo were identified. I then tested to what extent the competing theories of local isomorphism and imported firm-specific advantage explained the difference between the performance of the foreign and local trading rooms.

This study is of interest for both theory and practice. It sought to establish whether there are costs to doing business abroad, an assumption that, although largely untested, is critical to theories of multinational enterprise. I also attempted to test the performance implications for firms of two sets of alternative theories, the resource-based and the institutional. The study also has implications for the question of how integrated or responsive a company can or should be in its organizational practices (Prahalad & Doz, 1987) as it pursues an international strategy.

THEORY AND HYPOTHESES

The Liability of Foreignness

In the literature on multinational enterprises (Hymer, 1976; Kindleberger, 1969), the liability of foreignness—the costs of doing business abroad that result in a competitive disadvantage for an MNE subunit—have

been broadly defined as all additional costs a firm operating in a market overseas incurs that a local firm would not incur. In general, the liability of foreignness can arise from at least four, not necessarily independent, sources: (1) costs directly associated with spatial distance, such as the costs of travel, transportation, and coordination over distance and across time zones; (2) firm-specific costs based on a particular company's unfamiliarity with and lack of roots in a local environment; (3) costs resulting from the host country environment, such as the lack of legitimacy of foreign firms and economic nationalism; (4) costs from the home country environment, such as the restrictions on high-technology sales to certain countries imposed on U.S.-owned MNEs. The relative importance of these costs and the choices firms can make to deal with them will vary by industry, firm, host country, and home country. Whatever its source, the liability of foreignness implies that foreign firms will have lower profitability than local firms, all else being equal, and perhaps even a lower probability of survival.

The liability of foreignness is likely to be particularly acute in a simple, market-seeking, horizontal MNE (Caves, 1982), which is a multinational whose subunits are essentially replicas of each other that manufacture or distribute goods and services in different markets around the world. Such operations essentially compete on a local-for-local basis (Bartlett & Ghoshal, 1989). A vertical multinational enterprise, which uses its geographically dispersed subunits as stages in a globally integrated value-adding system in which it can exploit economies of global scale or scope, or a networked MNE, whose subunits have differentiated roles and levels of integration, may feel the liability of foreignness less (Ghoshal & Nohria, 1989).

The foreign exchange trading rooms of major multinational banks approximate horizontal MNEs in the financial services industry as they are essentially simple stand-alone operations in each of the locations they operate in, mandated to turn a profit by speculating on global currency markets and by providing currency exchange services to local customers. The product is undifferentiated. The bulk (over 85%) of banks' trading in currency markets appears to be driven by speculation on short-term trends in currencies (Bank for International Settlements, 1993; Lyons, 1993; Ohmae, 1990). Information—on trends in the demand for various currencies, on market expectations of price movements, and on likely policy outcomes—is critical to running a successful speculative trading operation. The rest of the trading is business conducted for bank customers, which tends to be competitively priced and may even be offered at no profit as a service to important customers (Eccles & Crane, 1988). However, the customer-related business is still valued as the flow of customer orders provides important advance information to trading rooms about the demand for different currencies, thereby acting as a leading indicator of potential price movements and facilitating the rooms' speculative operations. Further, currency trading rooms are legally allowed to "trade ahead" of customer orders, and large customer orders can thus contribute to speculative profit making (Lyons, 1993; Zaheer, 1992) even if the orders are not themselves particularly profitable.

Although the speculative portion of trading may take place across international borders, the customer-based business of currency trading rooms tends to be largely local (Bank for International Settlements, 1993). Perhaps institutional relationships or cost and convenience lead customers to contact trading rooms in the country in which they are located for quotes on currencies, rather than trading rooms overseas.

In this context, foreign trading rooms' liability of foreignness is likely to arise from the fact that the local trading rooms in a given location are better integrated into local information networks and perhaps also have a larger customer base than the foreign trading rooms in that location. Further, local trading rooms may have better connections to the local central bank and to other policy makers who influence the exchange rates of the local currency. Thus, German banks in Germany might have a better feel for whether the Bundesbank is going to lower deutsche mark interest rates within the next 24 hours than might British banks located in Germany. Information of this type is critical to running a successful trading operation; thus,

Hypothesis 1: Foreign trading rooms will be less profitable than local trading rooms in the same location, ceteris paribus.

Firm-Specific Advantage Versus Local Isomorphism

To overcome the liability of foreignness and compete with local firms, a multinational enterprise needs to either bring to its foreign subunit resources or capabilities specific to the firm (firm-specific advantages) or attempt to mimic the advantages of successful local firms. The costs that contribute to creating a liability of foreignness do not directly point to which of these options an MNE might prefer. An MNE might attempt to reduce the costs of coordination directly by giving total autonomy to a foreign subunit allowing it to behave like a local firm by, for instance, performing all value-adding stages in the foreign location. Or the parent might attempt to compensate for distance-related costs through scale economies or the premium attached to a brand name imported from the home country. Researchers studying international strategy and organization (Bartlett & Ghoshal, 1989; Porter, 1986; Prahalad & Doz, 1987) have suggested a range of industry-specific factors that might influence the extent of "local responsiveness" required from an MNE subunit, which in turn could affect the subunit's degree of similarity to local firms. Rosenzweig and Singh (1991) suggested that MNE subunits in multidomestic industries might be much more prone to local isomorphism than those in global industries.¹

In general, firm-specific advantage can be derived from traditional sources of competitive advantage, such as cost savings derived from econo-

¹ In multidomestic industries, competition in each country is essentially independent of competition in other countries (Porter, 1986); this is not so in global industries.

mies of scale or scope (Porter, 1986), or exploiting location-based cost advantages (Dunning, 1977), or such resources as a brand name or a differentiated product. Competitive advantage can also be derived from organizational capabilities such as the ability to learn or to transfer organizational practices and managerial skills across a multinational network (Bartlett & Ghoshal, 1989; Kogut, 1993).

In foreign exchange trading, the products are undifferentiated commodities, and practically any trading room anywhere in the world can satisfy a particular customer's requirements for most currencies. The technology in use in the large multinational banks' trading rooms is also fairly standard, as there are essentially three major global technology suppliers to this industry. In this context, the traditional sources of competitive advantage are likely to be of little or no consequence. Therefore, the transfer of firm-specific managerial or organizational skills, as embodied in organizational routines, is likely to be critical in compensating for the liability of foreignness. Thus,

Hypothesis 2a: Foreign trading rooms whose organizational practices more closely resemble those of their firms' domestic trading rooms will show less evidence of the liability of foreignness.

In discussing and testing the hypotheses, I use the difference between a foreign trading room's profitability and the average profitability of the local trading rooms in a particular location as an indicator of the foreign firm's liability of foreignness.

However, as discussed earlier, an alternative hypothesis is plausible. Writers in international organization theory (Arias & Guillen, 1991; Powell & DiMaggio, 1991; Rosenzweig & Nohria, 1994; Rosenzweig & Singh, 1991) have argued that MNE subunits are most likely to attend to the demands of their local environments. Others (Westney, 1988, 1993; Zaheer, 1992) have argued for the existence of multiple isomorphic pulls on MNE subunits, and Rosenzweig and Nohria (1994) suggested a number of factors that, across industries or practices, might moderate the extent of local isomorphism. The assumption behind the arguments for local isomorphism in these models is that an MNE subunit operating in a particular local environment (say, a subsidiary of an American multinational in Germany) will tend to follow local practices either because of coercive isomorphism (caused by the requirements of German regulations, for example), normative isomorphism (caused by professionally imposed requirements), or mimetic isomorphism (imitation caused by the success of local exemplars; DiMaggio & Powell, 1983). Mimetic isomorphism is likely to be particularly important in areas of free and unregulated economic competition, where firms will try to adopt the practices of others that appear to be the most successful in a given environment.

These arguments suggest that if local firms are generally more profitable than foreign firms in an industry (that is, if Hypothesis 1 is supported), the

pressures of mimetic isomorphism would lead MNE subunits to mimic the organizational practices of local firms and that those that do so will be more successful and show less evidence of the liability of foreignness than those that do not. Thus,

Hypothesis 2b: Foreign trading rooms whose organizational practices more closely resemble the practices of local trading rooms in their location will show less evidence of the liability of foreignness.

MARKET AND BUREAUCRATIC CONTROLS

Two criteria were used in selecting the organizational practices to be studied. First, the chosen practices had to be very different in the two sets of local trading rooms—those in the Western banks in New York and the Japanese banks in Tokyo—as only in that case would I be able to separate the effects of local isomorphism from the effects of imported firm-specific advantage. In addition, the practices needed to have some influence on trading room performance.

An exploratory phase of the study eliminated several organizational practices and pointed toward others. For example, formal structure was identical in all the trading rooms in New York and Tokyo and was therefore inappropriate for the purposes of this study. Every trading room had interbank traders dealing with currency pairs (dollar-mark traders and dollar-yen traders, for example), a smaller number of customer traders who executed orders from corporate clients, and a back office that confirmed deals and wired payments. Even the physical layout of trading desks tended to be fairly similar in both sets of local rooms, although a few of the Western banks in New York had island-shaped layouts rather than the less space-consuming straight-line layouts common in both New York and Tokyo. I eliminated both formal structure and physical layout as organizational practices worth comparing.

The one area in which the Western trading rooms in New York differed markedly from the Japanese trading rooms in Tokyo was in their control systems, which can be viewed as made up of market and bureaucratic controls.²

Market controls. When an organization employs a market mode of control, it "can simply reward each employee in direct proportion to his contribution" (Ouchi, 1979: 835). Organizational practices associated with mar-

² I did not use clan controls, which Ouchi (1981) noted as distinguishing Japanese and Western organizations, for two reasons: first, a construct of clan control based on variables drawn from previous research had low reliability across the subsamples (ranging from 0.35 to 0.62); second, the literature on clan controls would lead one to predict a relationship between clan controls and speculative profit making in currency trading only if they reduced costs by acting as a substitute for other forms of control. However, that was not the case in this sample, as the Japanese banks were high on both clan and bureaucratic control.

ket-type controls, such as basing a high proportion of traders' total incomes on performance-linked bonuses, hiring experienced traders from the external labor market, and high turnover among traders, were prominent in Western banks in New York. The Japanese banks in Tokyo, however, showed little evidence of these practices. Other writers have noticed these differences between Japanese and Western organizations (e.g., Aoki, 1988; Beechler, 1990; Ouchi, 1981).

What makes market-based controls particularly interesting in this context are the possible links between incentive-based compensation of traders, which is likely to result in better individual performance, and trading room performance. Profits in interbank foreign exchange trading in the major multinational banks tend to be driven largely by taking speculative positions in different currencies (Lyons, 1993; Ohmae, 1990; Zaheer, 1992) rather than by providing service to customers. As a room's speculative profits depend on the ability and efforts of individual traders, tying traders' compensation to their profit performance could lead both to a self-selection process, in which high-quality traders are attracted to market-controlled organizations, and to traders being motivated to put more effort into trading as they have high personal stakes in outcomes (Nalbantian, 1987). A trading room's profit largely depends on the aggregate profits of its individual traders, so individual and organizational performance are closely linked. This discussion suggests that market control will be positively associated with trading room performance.

Bureaucratic microcontrols. Bureaucratic control, which has been extensively discussed in the organization theory literature (e.g., Crozier, 1964; Meyer, 1990; Thompson, 1967; Weber, 1978), is a system of control based on rules and on the legitimacy of authority rather than on prices (market control) or on socialized commitment (clan control). There were striking variations in the type and extent of bureaucratic control exercised in the Japanese trading rooms in Tokyo and Western trading rooms in New York. These differences were most pronounced in an aspect of bureaucratic control unique to the trading environment, "microcontrols." These involve firms' setting detailed limits on intraday and overnight open positions³ by currency and by trader in an attempt to micromanage speculation by individual traders. Although some Western banks in New York also had such limits, the limits were much more rigid and appeared to be taken far more seriously by the Japanese banks in Tokyo. Again, other researchers studying Japanese organizations have commented on the tight bureaucratic control exercised in Japanese organizations (Beechler, 1990).

Further, bureaucratic controls are also likely to influence performance in a speculative profit-making context. Successful speculation in the currency markets depends on a trader's being able to accurately gauge market

³ An open position is the stock of a particular currency held by a trader in anticipation of a price change.

expectations of short-term price movements. To do so, the trader needs to be intensely engaged in trading and in seeking market information on the direction of trades and who is buying or selling particular currencies. Further, the trader has to make decisions within seconds on what prices to quote and whether to go long (buy) or go short (sell) a particular currency. Thus, only the trader on the spot has all the information required to make good decisions. Even a trading room manager who is watching the monitor on which banks display indicative prices from time to time does not have the intense engagement in the market required to sense and "ride" on short-term market trends, especially as when the market is busy, the prices shown on the monitor tend to lag behind the actual action (Lyons, 1993). In such a situation, attempts to micromanage trading through strict limits on risk positions and rules on the levels at which losses and profits have to be realized are likely to constrain traders' abilities to take full advantage of profit opportunities as they arise and are therefore likely to have a negative impact on trading room profitability.

The extents of these two organizational practices, use of market controls and of bureaucratic microcontrols, were examined to test the alternative hypotheses, 2a and 2b. However, I decided to test for the effect of firm-specific advantage and local isomorphism on the liability of foreignness separately for each practice as I expected them to influence performance in different directions, with market controls having a positive impact on profits per trader and bureaucratic controls having a negative impact. Not just the absolute distance, but the direction in which a particular trading room's practices differed from local or from home country practices, was likely to make a difference to its performance.

The results of a one-way analysis of variance and of a Scheffé test confirmed that market control was significantly different ($p < .01$) and bureaucratic control marginally different ($p < .10$) between the Japanese foreign exchange trading rooms in Tokyo and the Western rooms in New York.

METHODS

An initial exploratory study, which consisted of observation and interviews conducted at eight foreign exchange trading rooms of U.S. and Japanese banks in New York and in Tokyo, was used to identify the organizational practices that appeared most different in U.S. trading rooms in New York and Japanese trading rooms in Tokyo. This initial phase was followed by two surveys: the first, given to all foreign exchange traders in each room, asked about room-level practices (the independent variables); the second, given to the head of each trading room, assessed the dependent variable, trading room performance. Use of these two respondent groups was designed to eliminate common method bias.

Data

The full sample consisted of 28 trading rooms, 13 in New York and 15 in Tokyo, belonging to eight Western and eight Japanese banks. Surveys

were returned by 198 traders in the 28 rooms, for a 79 percent response rate, 63 percent in New York and 92 percent in Tokyo. The tests of isomorphism and firm-specific advantage were carried out on a subset of this sample, a paired sample of 24 trading rooms, 12 in New York and 12 in Tokyo, belonging to six Western and six Japanese banks. Each pair consisted of a trading room in Tokyo and a trading room in New York belonging to the same parent bank. The number of traders answering the survey in the paired sample was 174; numbers in each trading room subsample were as follows: Japanese rooms in Tokyo, 51; Japanese rooms in New York, 31; Western rooms in Tokyo, 53; Western rooms in New York, 39.

The banks were selected as follows: Using the list of foreign banks in Tokyo published by the Federation of Bankers Associations of Japan (Zenginkyo, 1989) and the Hambros Bank's (1989) Foreign Exchange and Bullion Dealers Directory as a guide, I identified nine New York-based U.S. commercial and investment banks as having operations and being authorized foreign exchange banks in Tokyo. The managers of six of the nine banks agreed to participate, but one bank had to be dropped as it did not have a full-fledged interbank currency-trading operation in Tokyo. Ten Japanese commercial and wholesale banks were identified as having trading operations in New York and Tokyo, and the managers of eight of these agreed to participate in the study. However, the New York operations of two of these banks could not be surveyed within this study's time frame because the heads of these rooms were away. Further, to increase the number of non-Japanese banks in the sample, I decided to include one American-European joint venture that had trading operations in New York and Tokyo. The banks studied were all prominent players in the global foreign exchange market. Ten of the 12 banks appeared on a list of the top 50 worldwide foreign exchange dealers over the 1979-91 period (Euromoney, 1991).

Questionnaires

I administered the questionnaires to all foreign exchange traders at each trading room and gave a separate questionnaire to the head of the trading room, who was also interviewed. The traders' aggregated responses were used in the analyses. Thus, although the full sample consisted of only 28 trading rooms, the room-level measures aggregated from the responses of 198 traders were remarkably robust and free from position bias (Phillips & Ba-gozzi, 1982). A Japanese version of the traders' questionnaire, which went through translation, back-translation, and pretesting, was used in Tokyo. To verify the accuracy of the translation, I calculated the reliability of all the constructs separately for the Japanese and English questionnaires and found them to be stable ($\alpha = .65-.95$; results are available upon request).

Variables

I checked the basic variables from the trader's questionnaires for inter-rater reliability and for the existence of room-level effects and aggregated them for each room. I further checked the room-level measures for correla-

tion with the responses of the heads of the trading rooms. The variables were then converted into distance measures, which are described below.

The liability of foreignness. For the foreign trading rooms (the Japanese trading rooms in New York and the Western trading rooms in Tokyo), the dependent variable was measured as the difference between the average profits per trader of all local trading rooms and the foreign room's profits per trader in the same city. For example, the liability of foreignness of a Japanese trading room in New York is the difference between the average profits per trader of all Western trading rooms in New York and the actual profit per trader of that particular Japanese trading room in New York. As the profits per trader of the local rooms were higher than those of the foreign rooms in most cases, the liability of foreignness was typically positive (though I did not constrain it to be so), with higher values implying a higher liability.

Profits per trader was derived from the questionnaire given to the trading room heads. I used a logarithmic transformation of this variable as it was a dollar figure.

Perceived room performance. In addition, a perceptual measure of room performance was constructed from the aggregated responses to four questions. Traders were asked if their rooms had "some of the best traders in the city" and were "among the most profitable rooms in the city" (1 = strongly disagree to 7 = strongly agree). They also rated total room profit and profits per trader. The reliability of this construct ranged from .93 to .95 across the subsamples. A high correlation with the trading room heads' ratings of profit per trader ($r = .65, p < .01$) provided an external check on the perceptual measure of room performance.

Some data on the basic dependent variable, profits per trader, were missing as only 18 heads of trading rooms reported this figure. This level of missing data (for 10 rooms across all subsamples) is understandable, given that this information is not publicly available, and it is remarkable that this study generated the level of support and confidence it did from the trading room heads who did report profits per trader.

The question then arose of whether to proceed using only the perceptual measure of performance. Although the perceptual measure is a good measure, I decided that the 18 data points on actual profits per trader were too valuable to ignore. The missing data were therefore estimated from the perceptual data, and a derived variable, profit per trader, was created, which consists of actual profits per trader for the 18 cases and predicted profits per trader for the other 10 cases ($R^2 = .29, F = 10.56, p = .003, \beta = .54, t = .003$). Some of the heads of trading rooms whom I was subsequently able to contact on the phone confirmed that the estimated figures were approximately correct. This estimated measure is at least as good as the perceptual measure on which it is based, and it benefits from including the available hard data on actual profits per trader.

Age and size. In testing Hypothesis 1 for the existence of a liability of foreignness, I controlled for trading room age, derived for most of the rooms

from the Hambros Bank's directories, which commenced publication in 1960, and in two cases, from interviews with long-tenured staff in the trading rooms. Trading room size, defined as number of traders, was drawn from the trading room heads' questionnaire.

Extent of local isomorphism. For each of the two organizational practices of interest, extent of market controls and extent of bureaucratic micro-controls, I measured the distance of a foreign room from the average value for that practice for the local rooms in the same city. These measures, signed distance on market controls and signed distance on microcontrols, captured both the degree of similarity and its direction, or whether the foreign rooms' use of the practices exceeded or fell short of local average use. I also measured absolute distance on both sets of practices, taking just the absolute values of the signed distance measures. For example, the extent of local isomorphism in market control for a particular Western trading room in Tokyo was the absolute value of the difference between its use of market controls and the average value of market control use for all Japanese trading rooms in Tokyo. The smaller this difference, the greater the extent of local isomorphism. A point to note here is that the reliability of a difference score on a construct is the square of the reliability of the underlying construct. As the reliabilities of the basic constructs being "differenced" for the full sample were .83 for market control and .92 for bureaucratic microcontrol, the reliabilities of the calculated difference scores are reasonably good (.69 and .85).

Firm-specific advantage. As in the case of local isomorphism, a separate measure of imported firm-specific advantage was created for each practice. Two measures, signed distance from home market controls and signed distance from home microcontrols, capturing both distance and the direction of firm-specific advantage, were calculated for each foreign trading room as the difference between the value of that practice for that room and the value of that practice for its paired room in the home country. As with the local isomorphism measures, I also calculated nondirectional measures of firm-specific advantage, capturing only how close a focal room's practices were to those of its home counterpart, without considering whether the values were larger or smaller. All the distance measures were based on the following measures of bureaucratic and market controls.

Bureaucratic microcontrols. Most empirical studies (e.g., Ghoshal & Nohria, 1989; Khandwalla, 1976) have defined bureaucratic control as formalization, centralization, and standardization, after the Aston studies (Pugh, Hickson, & Hinings, 1969). However, as discussed earlier, in foreign exchange trading the major source of variation in bureaucratic controls is the extent to which different trading rooms set detailed limits on open positions. These microcontrols are related to the concepts of centralization, standardization, and formalization, but the focus on controlling and dictating individual behavior is perhaps unique to trading environments. I used four questions to capture the existence of microcontrols, asking traders if their rooms

employed overnight position limits by currency, intraday position limits by currency, overnight position limits by trader, and intraday position limits by trader (yes or no; $\alpha = .92$, full sample).

Market control. Trading rooms that rely on the market to control their employees tend to pay for performance, are likely to hire traders from the external labor market, and are likely to sustain a fair amount of turnover because traders leave if they perceive their market price as higher (or are asked to leave if their market price is lower). Market control was therefore measured as the average for a trading room of responses on three questions capturing the extents of pay for performance, outside hiring, and turnover on seven-point Likert-type scales ($\alpha = .83$, full sample).

Control variable: Actual risks taken. Since foreign exchange trading profits are closely tied to risks taken (Ohmae, 1990), I controlled for actual risk taking in the trading rooms, measuring the difference in risk taking between each foreign room and the average risk taking of the local rooms.

In foreign exchange trading, risk is easily measured as the size of the net open position, as all trading rooms face the same exogenous volatility in currencies. This definition is analogous to viewing risk as bet-size (March & Shapira, 1992) when odds are the same. Further, individual traders have a good sense of what overnight positions each of them and their currency groups as a whole usually hold. This information and an indicator of the level at which individual traders usually took their losses were aggregated for each room and used to form an index of actual risk taking in that room. This index had high reliability ($\alpha = .83-.93$) across the subsamples and was a reasonable proxy for the rooms' net open positions. This measure also had a high correlation (.63, $p < .01$) with trading room heads' ratings of risk taking, providing an independent check on the measure's validity.

RESULTS

Caveats

Some caveats about interpreting the results of the data analysis are in order. Although the sample is small, the measures reflect an aggregation of the responses of 174 traders, so the reported correlations are ecological (Hofstede, 1980), or correlations of means. Regression analyses of such measures tend to have high explanatory power because of the robustness of the underlying measures and their low variance. Second, the sample consists of carefully matched pairs and contains a large proportion of the population I sought to represent (the nine U.S. and ten Japanese banks that had full-fledged currency-trading operations in both New York and Tokyo).

The problem of small numbers will affect nearly any study that attempts to look in depth at cross-national matched pairs of subunits of the same firm in any single industry. Without a doubt, one should treat findings based on small numbers as suggestive rather than definitive. But comparing local isomorphism with imported firm-specific advantage requires studies that control for industry and firm because specific organizational practices differ

in their importance and impact across different industries, and both isomorphism and competitive advantage are subtle concepts that benefit from exploration through combined field and survey methods.

A further caveat is that performance could only be measured once. However, the heads of the trading rooms did not consider the period during which the survey was given to be atypical.

Subsample Descriptive Statistics

Table 1 gives descriptive statistics for the four subsamples. Profits per trader, which ranged from \$0.95 million for the Japanese trading rooms in New York to \$1.88 million for the Japanese trading rooms in Tokyo, with the Western rooms in Tokyo and in New York in between, and the index of actual risk taking were not significantly different across the four subsamples. However, the subsamples differed significantly on market control, age, and size ($p < .05$), and bureaucratic control was marginally higher ($p = .07$) in the Japanese rooms in Tokyo than in the Western rooms in New York. In terms of age, the Western trading rooms in New York had been in the business of interbank currency trading longest, averaging 24 years in 1991, and were significantly older than all three other groups. The average age of the Japanese rooms in Tokyo, 12 years, was not significantly different from the average age of all the foreign rooms (8 years). In terms of number of traders, the Japanese rooms in Tokyo, with an average 82 traders each, were twice the size of all the other rooms, which averaged between 31 and 43 traders.

The Liability of Foreignness

In testing, I controlled for age to ensure that the liability of foreignness was not just a liability of newness (Carroll, 1983; Freeman, Carroll, & Hannan, 1983), or a parent bank's lack of experience in a particular location in this line of business. I also controlled for trading room size. A one-way analysis of variance comparing profits per trader in the foreign and local rooms, with the age and the size of the trading room as covariates, yielded a cell mean of 13.9 for foreign trading rooms and 14.42 for local rooms ($F = 7.5, p < .05$). These results support Hypothesis 1, which predicts that trading rooms operating overseas will be less profitable than rooms operating in their home country.

Further, neither the age nor size of a trading room was significantly related to profits per trader. Size did not matter perhaps in part because these were all large rooms of major international banks, the only banks to trade out of both New York and Tokyo. Age may not be significant in explaining performance in this industry because, although some trading rooms have been providing customer service for over 30 years, the industry changed dramatically in the late 1970s and early 1980s after the Jamaica agreement of 1976 formalized the break from fixed exchange rates (Daniels & Radebaugh, 1994). As a result, it is possible that length of experience is not as important in this industry as it may be in some others. Since age and size showed no

TABLE 1
Descriptive Statistics for Subsamples^a

Variables	1. Western Trading Rooms in New York	2. Western Trading Rooms in Tokyo	3. Japanese Trading Rooms in New York	4. Japanese Trading Rooms in Tokyo	F ^b	F ^c
Profit per trader	\$1.76 million	\$1.23 million	0.95 million	1.88 million		
Profit per trader (log)						
Mean	14.38	14.03	13.76	14.45	2.13	
s.d.	0.70	0.75	0.32	0.38		
Risk taking						
Mean	1.32	1.23	1.37	1.69	1.81	
s.d.	0.48	0.43	0.36	0.09		
Market controls						
Mean	1.87 ^d	1.99 ^e	1.66 ^d	0.92 ^{d,e}	12.81**	26.87**
s.d.	0.45	0.22	0.48	0.17		
Bureaucratic microcontrols						
Mean	2.51	2.87	3.79	3.51	2.63†	4.05†
s.d.	1.21	1.21	0.33	0.51		
Age ^d						
Mean	24.14 ^{2,3,4}	7.86 ^f	7.67 ^f	11.75 ¹	9.84**	
s.d.	9.77	3.53	5.09	5.73		
Size						
Mean	43.14 ⁴	31.43 ⁴	42.00 ⁴	82.13 ^{1,2,3}	6.77**	
s.d.	28.16	25.09	21.08	19.45		
N	7	7	6	8		

^a Superscripts indicate which other subsamples a given subsample is significantly different from ($p < .05$).

^b Across all four subsamples.

^c Subsamples 1 and 4 only.

^d Age is in years.

[†] $p < .10$

^{**} $p < .01$

relationship to the relative profitability of local and foreign trading rooms in this group of firms, I omitted them from the regression analyses reported below.

The finding that a liability of foreignness exists even in a highly competitive, global industry such as foreign exchange trading, where the product is undifferentiated and the costs of operating across borders should be minimal, lends strong support to Hymer's (1976) primary argument that there are always costs to doing business abroad.

Local Isomorphism Versus Firm-Specific Advantage

Correlation matrixes of all variables used in the subsequently reported hypothesis tests, including a variable for location, appear in Table 2 for the signed measures and in Table 3 for the absolute measures of isomorphism.

For both market controls and microcontrols, local isomorphism and firm-specific advantage were negatively correlated, though the relationship was significant only for market controls (Pearson's $r = -.87$, $p < .01$). Also, location (New York or Tokyo) significantly affected both the extent to which the market control practices of foreign firms were similar to local market control practices ($r = .80$, $p < .01$) and the extent to which they imported

TABLE 2
Descriptive Statistics and Correlations of Signed Distance Measures

Variables	Means	s.d.	1	2	3	4	5	6
1. Liability of foreignness	0.45	0.62						
2. Distance from local rooms, microcontrols	0.17	1.45	.43					
3. Distance from home rooms, microcontrols	0.05	0.67	-.16	.12				
4. Distance from local rooms, market controls	0.44	0.77	-.07	-.84*	.24			
5. Distance from home rooms, market controls	0.39	0.58	.58*	.72**	-.07	-.38		
6. Distance from local rooms, risk	-0.21	0.48	-.30	.52	.09	-.65*	.24	
7. Location ^a	1.50		-.28	-.80**	.12	.88**	-.75**	-.57

^a New York = 1, Tokyo = 2.

* $p < .05$

** $p < .01$

TABLE 3
Descriptive Statistics and Correlations of Absolute Distance Measures

Variables	Means	s.d.	1	2	3	4	5	6
1. Liability of foreignness	0.45	0.62						
2. Distance from local rooms, microcontrols	1.16	0.82	-.42					
3. Distance from home rooms, microcontrols	0.44	0.49	-.17	-.14				
4. Distance from local rooms, market controls	0.73	0.47	-.17	-.28	.26			
5. Distance from home rooms, market controls	0.54	0.43	.29	.18	-.33	-.87**		
6. Distance from local rooms, risk	-0.21	0.48	-.30	.09	-.11	-.18	-.04	
7. Location ^a	1.50		-.28	-.15	.33	.80**	-.65**	-.57

^a New York = 1, Tokyo = 2.

* $p < .05$

** $p < .01$

such practices from home ($r = -.65$, $p < .01$); however, location was unrelated to microcontrols. Among the foreign trading rooms in Tokyo, local isomorphism in market control was low and imported practices were high. This finding has considerable face validity, for it is the foreign firms in Tokyo that have been introducing market control practices such as performance-linked compensation into the Japanese foreign exchange trading industry. The direction of the relationships in microcontrols is just the opposite, with foreign rooms in Tokyo showing greater distance from their home rooms, though this relationship is not significant.

Table 4 shows the results of regression analyses using both the absolute values of distance from local and home practices (the measures of isomorphism and firm-specific advantage, respectively) and the signed directional measures.

Results on the absolute measures suggest that the most important finding is that local isomorphism and imported firm-specific advantage have different effects on the liability of foreignness for the two sets of organizational practices. For microcontrols, foreign trading rooms that are distant from local practice show less evidence of the liability of foreignness (they perform better), but this is not true of market control. Previous studies have established that local isomorphism varies across organizational practices (Rosenzweig & Nohria, 1994; Zaheer, 1992). This study attempted to take those findings a step further by relating the extent of local isomorphism and

TABLE 4
Results of Regression Analyses for Liability of Foreignness

Variables	Absolute Distances		Signed Distances	
	Microcontrols	Market Controls	Microcontrols	Market Controls
Distance from local practice	-0.47†	1.01	0.79†	-2.24†
Distance from home practice	-0.08	0.03	-0.19	2.08*
Distance from local rooms, risk	-0.67*	-1.08*	-0.71*	-0.59*
Location ^a	-0.71*	-1.68*	-0.03	2.90†
R ²	0.61	0.64	0.60	0.72
Adjusted R ²	0.39	0.44	0.37	0.56
F	2.78	3.15	2.63	4.49
p	0.11	0.09	0.13	0.04

^a New York = 1, Tokyo = 2.

† p < .10

* p < .05

imported firm-specific advantage to the difference in performance between local and foreign subunits.

In results for the signed difference measures, the differing effects on the liability of foreignness of market controls and of microcontrols is more marked. The higher the extent of market control compared to local norms, the lower a trading room's liability of foreignness. Thus, whether a trading room is in New York or in Tokyo, strong market-based controls relative to the local average are likely to lead to better performance. The opposite appears to be the case with microcontrols, whose extensive use appears to depress performance.

As for imported firm-specific advantage, the closeness (the absolute distance) to home practices does not have a significant relationship to the liability of foreignness for bureaucratic or for market control, but the direction in which the extent of market control differs from practices at home does have an effect: the higher the extent of market control in a focal unit compared to practices at home, the greater the liability of foreignness.

The combination of that finding with the earlier finding, that high market control compared to local practice is linked to better performance, has some very subtle implications regarding firm-specific advantage. Although it is clear that high use of market-based control relative to local practice enhances performance, subunits of firms whose home trading rooms do not use high levels of market control (and whose foreign rooms have higher levels of market control than their counterparts at home) suffer in performance. This result may occur because the firms lack the internal expertise needed to implement market controls. This finding reinforces the idea that firms find it difficult to implement practices with which they are unfamiliar and that

their administrative heritage can thus facilitate or constrain their performance (Bartlett & Ghoshal, 1989). It also supports the idea that the mimicking of organizational routines across firms is an imperfect process, but that "a firm with an established routine possesses resources on which it can draw very helpfully in the difficult task of attempting to apply that routine on a larger scale" (Nelson & Winter, 1982: 119). In other words, for a multinational enterprise trying to establish organizational routines (such as market controls) in a subsidiary, experience with those routines in the home office can provide significant firm-specific advantage. In contrast, attempting to copy the practices of efficient local organizations in areas in which the home office has no expertise may depress performance at the subunit level.

Follow-up interviews with the heads of some of the Japanese trading rooms in New York and in Tokyo further supported this finding. Almost without exception, the heads of these rooms (all Japanese nationals) felt that market-based controls could help improve performance among their traders, given the nature of trading, and some of them were trying to implement performance-based compensation plans, particularly in their New York offices. However, the lack of expertise in the parent banks in this area appeared to hinder their efforts to implement effective plans, and some of them mentioned their continuing struggles and experimentation with different types of performance-based plans.

Specific examples of foreign rooms that were high and low performers will illustrate some of the issues raised. Most of the Japanese trading rooms in New York attempted to differentiate some of their organizational practices from those of the local rooms by being even more bureaucratic than their Tokyo siblings, while still attempting to copy local New York practices in market control; the extent of market control in these rooms was, however, lower than that of the average Western bank in New York. But the worst-performing Japanese trading room in New York was less differentiated from the local rooms on bureaucratic control than the other New York-based Japanese trading rooms, and in trying to copy local practices, it ended up more market-oriented in its control than the average Western bank in New York. This attempt to outdo the locals in what they were good at was clearly not working for this trading room, and perhaps in the process, it lost distinctive organizational competence that might have been available to it as a result of its administrative heritage.

In contrast, the two best-performing Western trading rooms in Tokyo (which, incidentally, were the best-performing foreign rooms in the sample) were both more driven by market control than even their siblings at home in New York, thus differentiating themselves substantially from the local rooms in Tokyo. One of the two was also lower on bureaucratic controls (it had no limits or rule-based controls at all) than its sibling in New York and substantially lower on bureaucratic controls than the local rooms in Tokyo, and the other was slightly more bureaucratic than its home-based sibling in New York, while still significantly less bureaucratic than the average Japanese trading room in Tokyo.

IMPLICATIONS

The reported results imply that, when the major source of firm-specific advantage lies in organizational capabilities, foreign subunits may be better off sticking with routines imported from home than attempting to completely mimic local practices with which their parent organizations have little experience. This result supports the role of administrative heritage in providing competitive advantage to multinational subunits (Bartlett & Ghoshal, 1989) and offers evidence of the difficulty firms face in copying organizational routines from other firms (Lippman & Rumelt, 1982; Nelson & Winter, 1982).

Although the results generally support the role of firm-specific advantage as embodied in imported organizational practices over local isomorphism as an effective way for MNE subunits to overcome the liability of foreignness, this finding needs to be interpreted with caution. In particular, it is possible that in industries in which firm-specific advantage is embodied in technology, brand name, scale, or some other resource, rather than in organizational capabilities, local isomorphism in organizational practices may not hurt and may even help subunit performance.

Overall, the influence of isomorphism and of firm-specific advantage on the organizational practices of multinational subunits as they try to overcome their liability of foreignness is complex and often practice-dependent. Certain practices—for example, the formal structure of a trading room—are globally isomorphic, driven by practicality and efficiency considerations: any caller from anywhere in the world wanting to trade can ask for the dollar-mark trading desk and be assured that there will be one. Deviation from such global norms would likely be a source of competitive disadvantage as such a structure would ignore the demands of the global environment (Lawrence & Lorsch, 1967). Again, certain practices may be isomorphic with those of the local environment, but not because of the regulatory influences of coercive isomorphism, or because of the professional norms of normative isomorphism, or because of deliberate mimetic behavior, but because of economic considerations alone. For instance, even those Western trading rooms in Tokyo whose home offices in New York have island layouts have little choice but to adopt a tightly packed, straight-line layout, given the high price of real estate in the downtown Ohtemachi district of Tokyo. Some theorists, notably Westney (1988, 1993), have begun to deal with some of the complexity in the issue of isomorphism in multinational subunits by discussing the pressures for isomorphism from the multiple “organizational fields” (DiMaggio & Powell, 1983) to which a multinational subunit belongs.

The results of this study also suggest a different way of looking at the issue of integration versus responsiveness (Prahalad & Doz, 1987) for different elements of value-adding activity in multinational enterprises and may offer a way to integrate the theory of multinational enterprise (Buckley & Casson, 1976; Dunning, 1977; Hymer, 1976) with theories of multinational strategy and organization (Bartlett & Ghoshal, 1989; Prahalad & Doz, 1987).

For instance, one could speculate that value-adding activities that provide a multinational corporation with its firm-specific advantage are best carried out in a globally integrated manner (whether the integration happens through centralization or through coordination or through the systematic replication of the source of the advantage across all of the MNE's subunits) but that other value-adding activities, those in which the multinational has no particular advantage over local firms (or even faces a disadvantage), are best left to the discretion of the subunit. Of course, an MNE may have different advantages over its competitors in various markets, a factor that shifts the choice from the simple one of whether a particular activity should be managed in an integrated or responsive fashion, to the more complex issue of the transnational management (Bartlett & Ghoshal, 1989) of networks of subunits. Perhaps groups of subunits that share similar advantages over their competitors could be managed as an integrated cluster. Cross-subunit learning could be encouraged if a particular subunit develops expertise that may be valuable for another subunit facing a different type of competitor in another local market. If, for example, the Japanese trading rooms in New York gradually became more adept in implementing market controls, they might be in a position to transfer their skill in this area to their sister rooms in say, France, where such skill might provide a competitive advantage over French trading rooms.

This study suggests several possible directions for future research. The issue of the liability of foreignness itself opens up a range of possible research questions and suggests a need for both longitudinal and cross-sectional empirical work in different industries with different types of firms. How does the liability of foreignness behave in different industries and over time? As a foreign firm gains experience in a particular location, does its liability of foreignness decline? As industries globalize, does foreignness continue to carry costs? What aspect of foreignness matters most: a unit's ownership, the location of its head office, or the perception that its parent is foreign? Does variation in the legitimacy of foreign firms in different countries influence the liability of foreignness?

The study also suggests a need to empirically compare strategic choice-based theories of competitive advantage to institutional theories, even in nonforeign situations. Further, researchers need to understand what influences successful intra- and interfirm replication of organizational practices.

CONCLUSIONS

This study established that a liability of foreignness exists in a competitive industry, foreign exchange trading, and examined whether local isomorphism or imported capabilities better explained the difference in the profitability of local and foreign trading rooms in international banks. The results suggest that firm-specific advantage, as embodied in imported organizational practices, may be a more effective way for multinational enterprises' subunits to overcome the liability of foreignness than imitation of

local practices. Although local isomorphism was related to differences in profitability, the relationship was not always in the direction predicted by institutional theory. For example, greater distances from local practice in the area of market controls were related to better performance. Further, the effect of imitation of local practices on the liability of foreignness varied by practice. It became apparent in this in-depth study of one industry that a multinational subunit trying to overcome its liability of foreignness is likely to be drawn toward models both from its local and its home environment in complex and subtle ways, with its administrative heritage influencing the effectiveness with which it can implement certain organizational practices overseas. The study also suggested a way of integrating the theory of multinational enterprise with theories of international strategy and organization.

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CONFIRMATORY CROSS-CULTURAL RESEARCH: TESTING THE VIABILITY OF A CORPORATION-WIDE SAFETY POLICY

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This study examined variation in the relationships among constructs affecting the perceptions of safety of workers at the U.S., French, and Argentine plants of the same division of a U.S. multinational, all affected by the same corporation-wide safety policy. We proposed differences based on the profiles of the three countries on three cultural dimensions—individualism/collectivism, authoritarian or paternalistic management style, and autocratic or participative decision making—and compared the cultural groups using multisample analysis in structural equation modeling. Results confirmed hypotheses predicting a lower effect of management's overall concern for employees on the extent to which safety was a priority in France than in the United States and a stronger effect of management concern on safety as a priority in Argentina than the United States; in addition, an emphasis on production had less effect on perceived safety level in Argentina than in the United States.

With the increasing focus on international management (e.g., Bartlett & Ghoshal, 1991; Rosenzweig & Singh, 1991), it is important that academics and practitioners understand the suitability of corporations' having a common management policy in different cultures. Important strategic issues in the area of international human resource management need to be addressed: Which policies should be universal? Which ones should be local? To what extent can management practices override national cultural differences to create a global company? Are corporation-wide policies desirable or even possible?

The reported study focused on those questions by testing the cross-cultural viability of a model underlying a multinational organization's corporate safety policy. We tested whether relationships among constructs affecting workers' perceptions of safety varied as a function of culture. The model was tested at three different manufacturing sites in the United States,

We would like to thank James C. Anderson, Zoe I. Barsness, Max H. Bazerman, Anne L. Lytle, and Catherine H. Tinsley for their helpful comments and suggestions.

France, and Argentina. We identified the dimensions of culture that may affect the model by profiling the cultural groups in the study on those dimensions and then generated hypotheses about which relationships would vary with culture (Lytle, Brett, Barsness, Tinsley, & Janssens, 1994). We derived the profile of each cultural group inductively from secondary sources in the comparative industrial relations literature (Bean, 1985; Poole, 1986) and the literature on cultural values (Hofstede, 1980) and derived hypotheses deductively by applying the implications of each group's cultural profile to the source model. These steps, based on Lytle and colleagues' (1994) work, produced the cross-cultural design of the study and are consistent with the three-step approach of Berry (1989).

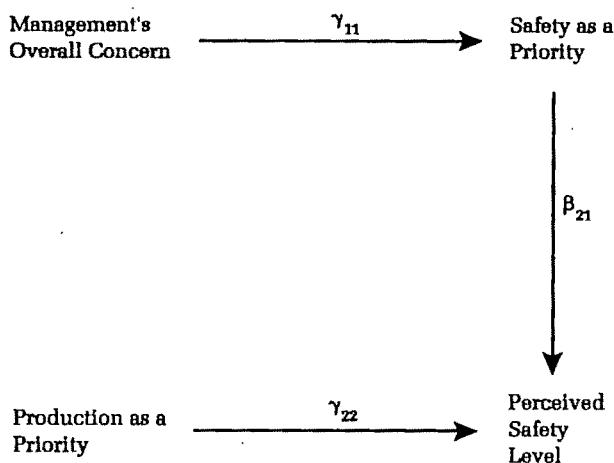
THEORY AND HYPOTHESES

Source Model

Published in a widely circulated brochure, the safety policy of the multinational corporation studied states that "every step of manufacturing from processing through packaging and shipping can involve potential risk to workers," that "risk simply cannot be eliminated," and that "risk can and must be managed." The company's program for managing risk involves both corporate and local management. Every facility is audited regularly to ensure sound health, safety, and environmental practices, and corporate environmental engineers assist local coordinators, who report to senior plant management. Special corporation-wide meetings are held regularly between manufacturing plant managers and corporate health, safety, and environment coordinators. At these meetings, problems are identified and discussed and action plans developed. All three plants in this study were involved in these regular audits, consultations, and meetings. The company, which recognized that its success in protecting employees' health and safety could not be measured solely by its own standards, invested in a corporation-wide safety survey to measure how well the company was meeting the needs and expectations of employees in the area of safety. The safety survey's structure was based on the National Safety Council's findings that in the United States, management attitudes have a significant impact on workers' safety (Asfahl, 1984). The safety survey measured three constructs presumed to affect perceptions of the safety level at a plant: management's overall concern for employees, management's attention to safety, and management's attention to production.

Figure 1 presents our model of the effect of management attitudes on workers' perceptions of the safety level at their plant. The figure shows that management's concern for employees in general is hypothesized to affect the attention management places on safety. Levy and Wegman (1983) argued that management has a responsibility to minimize any negative aspects of situations affecting employees' health and safety. So, we expected that the higher management's overall concern for its employees, the higher its concern for safety.

FIGURE 1
Model of Safety Relationships



Hypothesis 1: A high level of overall management concern for employees will be positively related to the extent to which safety is a high priority for management.

A number of National Safety Council studies have also shown that United States managers' interest and involvement in safety at a workplace result in lower injury rates (Asfahl, 1984). Thus, we propose that the greater management's emphasis on safety, the higher the perceived safety level on the shop floor.

Hypothesis 2: A strong management emphasis on safety will increase the safety level perceived by employees.

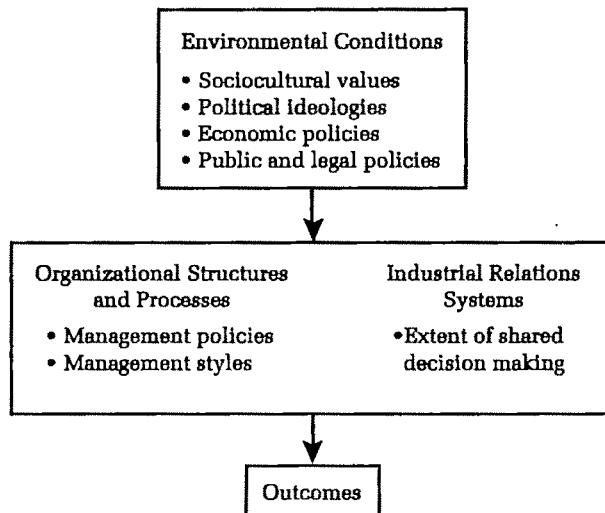
Placing priority on production, in contrast, is expected to decrease the perceived safety level. According to the National Safety Council, bad working conditions, tight schedules, and unsafe work layouts reflect management's subordination of safety to productivity. Such an emphasis on production leads to increased tension and frustration among workers, which lead them to have more accidents (Asfahl, 1984; Keenan, Kerr, & Sherman, 1951).

Hypothesis 3: A strong management emphasis on production will decrease the safety level perceived by employees.

Comparative Industrial Relations Context

Comparative industrial relations theorists seek to examine and explain the effects of economic, cultural, and social influences on the relationships between management, labor and its representatives, and the state and its agencies (e.g., Bamber & Lansbury, 1987; Bean, 1985; Poole, 1986). In Poole's (1986) framework (Figure 2), environmental factors, such as cultural values

FIGURE 2
Framework for Comparative Analysis of Industrial Relations^a



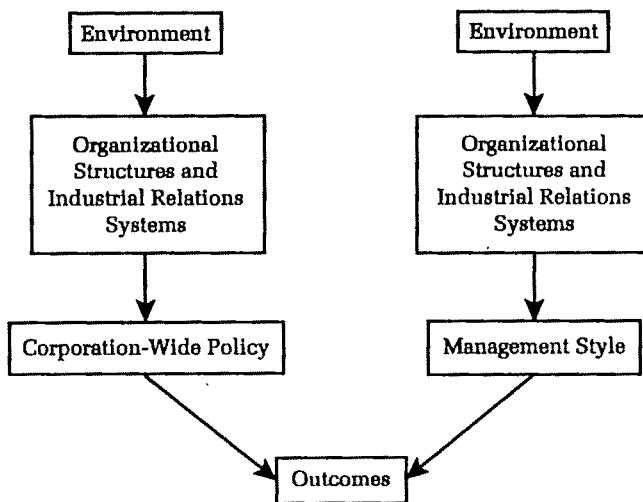
^a From Poole (1988).

and social, economic, and legal structures, affect the implementation of organizational policies, which in turn affect outcomes. Poole demonstrated that this general theoretical framework is appropriate for explaining the origins of organizational actions and differences in comparative industrial relations research. In this study, the framework served as a context for our model of safety by linking outcomes, such as perceptions of safety, to management styles and cultural values.

Poole's comparative framework needed to be modified to account for differences between multinational sites. Figure 3 illustrates this modification. Cultural values and social, economic, and legal structures in an organization's home country are expected to affect its corporate policy. Perceptions of the corporate policy at the different sites will also be affected by local management style, which in turn is affected by local cultural values and social, economic, and legal structures. In this case, the outcomes (perceptions) are influenced not only by a corporation-wide policy, a constant at each site, but also by local management practices. Since organizational practices, shaped by different cultural value systems, reflect managers' assumptions about how to manage people and the management structures that result from those assumptions (e.g., Hofstede, 1983; Laurent, 1986; Schneider, 1986), the model is likely to be different in different cultural settings.

The question that this study investigated was whether the perceptions of the relationships among the constructs affecting perceived safety level were similar at the three sites, as a result of the constant policy, or whether local organization-level phenomena, such as cultural values and management styles, shaped those perceptions. Despite the corporate safety policy,

FIGURE 3
**Modified Framework for Comparative Analysis of a Multinational's
 Industrial Relations**



we expected that the relationships would vary as a result of differences in local management styles.

Cultural Dimensions

Individualism/collectivism and management style. As a cultural dimension, individualism/collectivism concerns the degree to which individuals are integrated into a group (Hofstede, 1980; Triandis, Leung, Villareal, & Clack, 1985). On the individualist side are societies in which the ties between individuals are loose: all members are expected to look after themselves and their immediate families. The emphasis is on individual initiative, self-sufficiency, and individual accomplishment. On the collectivist side are societies in which, from birth onward, people are integrated into strong, cohesive groups. Individuals subordinate their personal interests to the goals of their collective, or in-group, those with whom they work and identify (Triandis et al., 1985). Collectivists belong to only a few in-groups, often extended families that protect them in exchange for unquestioning loyalty. Behavior within the group emphasizes cooperation, group welfare, duty, security, and stable social relationships.

Variation on this dimension has a profound impact on management practices (e.g., Adler, 1986; Hofstede, 1983, 1992). In general, organizations in individualist cultures apply the same standards to all employees; managers see people as potential resources and consider tasks as more important than relationships. The relationship between employer and employee is "calculative" (Hofstede, 1992). The corresponding managerial style in in-

dustrial relations can be best described as directive or authoritarian (Kerr, Dunlop, Harbison, & Myers, 1960). The managers of organizations in collectivist cultures see people as members of a group, apply different standards to in-group and out-group members, and consider relationships more important than tasks (Hofstede, 1992). Here, leadership is a group phenomenon. A working group, which is not usually a natural in-group, has to be made into an in-group if it is to be effective. People in collectivist countries bring considerable loyalty to their jobs, provided they feel that their employer returns their loyalty in the form of protection, as does their natural in-group (Hofstede, 1983). In short, the employer-employee relationship in a collectivist society is "moral" (Hofstede, 1992). The corresponding managerial style in industrial relations can be best described as directive but welfare-oriented or paternalistic (Kerr et al., 1960). Interest in the welfare of the group, not the self, underlies collectivism (Kagitcibaci, 1987).

Autocratic and participatory decision making. Workers can be involved in decisions affecting an organization, either directly or through elected representatives, to varying degrees. Patterns of decision making in organizations are linked to the political and economic structure of the broader society by legislation and are in part the product of differences in the ideological orientation of national labor movements (Kassalow, 1982). United States labor unions have traditionally focused on strengthening collective bargaining; in contrast, European unions have pursued a broader social agenda (Bean, 1985). Democratization of the workplace is regarded as a part of the broader agenda for the transformation of authority and power within a society. Kassalow (1982) attributed the identification of the European labor movement with the democratization of the political process to the fact that the rise of trade unionism in Europe at the end of the 19th century occurred within the context of the struggle for political democracy. In contrast, the union movement in the United States postdated the struggle for democracy by decades.

Cultural Profiles

United States. Individualistic values, which are predominant in the United States (Hofstede, 1980), are consistent with a managerial focus on a union-free environment, a pronounced shareholder perspective, a high level of control (Poole, 1986: 47), and an authoritarian management style. State and federal legislation set worker safety standards; management is responsible for conforming to those standards, and government agencies enforce them. Fines for violations are levied directly on management. Even when workers are represented by unions (the workers in the United States sub-sample in this study were not), the unions use grievance procedures to identify and resolve their members' concerns about safety (Miller, 1987).

France. France is slightly less individualist than the United States (Hofstede, 1980), and managements maintain "the maximum degree of managerial discretion while seeking to tie workers directly to the firm" (Gallie, 1978: 183; 1983). In both the United States and France, employers have high

aspirations for control (Poole, 1986: 52). However, in France most manufacturing workers are unionized, as were those in our French subsample. The industrial relations system in France gives the unions a direct role in promoting safety on the shop floor, with workers represented on work councils and participating in decisions about technical, on-the-job problems, welfare and safety, wages and working conditions, and wider production, commercial, and economic issues (Baglioni & Crouch, 1990; Salamon, 1987). Union jurisdiction is not restricted to handling employees' grievances but extends to codetermining such matters as working hours and accident prevention. In the area of health and safety, the union's role is to cooperate with management in achieving high standards of health and safety at work.

Argentina. Argentina is a collectivist country (Hofstede, 1980). In Argentina, the private sector is not heavily unionized, and the Argentine workers in this study were not represented by a union. A model of paternalism and authoritarian management governs private enterprise (Cordova, 1984). In general, an Argentine management exercises its power autocratically, discourages unionization, and demands loyalty from its workers. Labor relations, therefore, are mainly an extension of this paternalism. When there are collective agreements, they generally deal with fringe benefits such as medical care, schools, holiday centers, and sports facilities. These types of benefits are supposed to increase employees' loyalty to the employer.

In sum, the cultural dimension individualism/collectivism affects managerial style (Poole, 1986), which is authoritarian in both the United States and France and paternalistic in Argentina. In France, however, an industrial relations system that requires that managements share responsibility for safety, among other things, with unions tempers authoritarianism. These cultural differences are the foundation for our hypotheses about cultural differences.

Cross-Cultural Hypotheses

In the United States and France, management styles are similar because of the countries' shared individualistic values, but the decision-making structure differs significantly in the two countries. In the United States, state and federal legislation set safety standards; this high degree of legal intervention results from the structural legal authority of the U.S. Constitution (Poole, 1986: 26). In France, managements and unions cooperate in promoting standards of health and safety. We expected that the French unions' shared responsibility for safety would dilute the relationship between management's overall concern for employees and the extent to which safety was a management priority. In general, we expected much more diffusion of responsibility for safety management in France than in the United States.

Hypothesis 4: The level of management's overall concern for employees will influence the extent to which safety is a priority less in France than in the United States.

In Argentina, we expected that paternalism would influence the rela-

tionship between management's overall concern for employees and the extent to which safety is a management priority. We expected a stronger relationship between the two constructs in the Argentine than in the U.S. subsample because the paternalist employers in Argentina would be more likely to consider safety a priority than the individualistic U.S. employers.

Hypothesis 5: The level of management's overall concern for employees will influence the extent to which safety is a priority more in Argentina than in the United States.

The positive relationship between production as a priority and safety level hypothesized in the United States can be seen as a consequence of U.S. individualism. In individualist countries, production is seen as the responsibility of every worker. If the emphasis on production increases, workers may start taking risks, stress may increase, and the perceived safety level may decrease. In collectivist countries, however, there may be no relationship between production and safety. Increased production is seen as everyone's responsibility when the work group is an in-group. Stress is diffused, and there is no need for individuals to take risks. Individuals in collectivist countries, afraid that they may hurt others, may not even be willing to take risks in work settings. In addition, the paternalistic management style in Argentina is more welfare-oriented than the individualist style in the United States. Since relationships prevail over tasks in collectivist cultures, management's concern for production may not be as high as in individualist cultures.

Hypothesis 6: A strong management emphasis on production will influence perceived safety levels less in Argentina than in the United States.

In sum, we expected cross-cultural differences between France and the United States and Argentina and the United States on the relationship between management's overall concern for employees and the priority accorded to safety to result from differences in management style and decision-making structure. We also expected cross-cultural differences between the United States and Argentina on the relationship between management's emphasis on production and the perceived workplace safety level to be a consequence of differences between the countries on the psychological dimension of individualism/collectivism. We had no a priori reasons to expect differences between cultures on the other parameters in the model in Figure 1.

METHODS

Sample

The sample, 300 American, 241 French, and 152 Argentine employees of a U.S. multinational company, included all blue-collar employees at one

plant in each country. Table 1 breaks the sample down by age and number of years of employment with the company. Most of the respondents were between 30 and 50 years old. Tenure was on the average lower at the Argentine plant than it was at the U.S. and French plants, which were older.

Measures

Four constructs—safety level, management's overall level of concern for employees, the extent to which safety was a priority, and the extent to which production was a priority, were measured by 20 questionnaire items. An English questionnaire was translated into French and Spanish and then back-translated to ensure similarity of meaning in the three versions (Brislin, 1980).

Analyses

An initial measurement model suggested by National Safety Council findings was estimated for the U.S. subsample with the LISREL IV program (Jöreskog and Sörbom, 1989). We scaled the constructs by setting the indicator with the highest loading to 1.0 variance and tested the structural model using the sequential testing procedure recommended by Anderson and Gerbing (1988).

Multisample analysis (Jöreskog & Sörbom, 1989) was used to test whether the structural coefficients linking relationships between the constructs in the U.S. subsample were similar to the structural coefficients generated for the two other cultures. First, we used confirmatory factor analysis to test whether the measurement properties of the observed variables were the same in all three cultures. This test was conducted to indicate the unidimensionality of the constructs and the cultural appropriateness of their operational definitions. Items that loaded inappropriately in a comparison culture might not have been translated properly or might have had a unique meaning in either the source or comparison culture. Second, if support for a measurement model emerged, multisample analysis could be used to test

TABLE 1
Characteristics of Sample^a

Characteristic	United States	France	Argentina
Age			
<30 years	16%	10%	19%
30 to 50 years	63	80	71
>50 years	21	10	10
Organizational tenure			
<5 years	34	6	44
6 to 10 years	23	21	23
>10 years	43	73	33

^a N = 300, 241, and 152 for the three countries in order of appearance.

hypotheses about similarities and differences between the structural models in the different cultures. The test specifies which structural relations should be invariant and which should vary. We conducted two multisample tests using the U.S. subsample as the source group and the French and Argentine subsamples as the comparison groups.

RESULTS

Measurement of the U.S. Sample

The initial measurement model for the U.S. subsample fit the data poorly ($\chi^2 = 427.22$, $df = 164$, $p < .000$). We based respecification decisions on content and statistical considerations (Anderson & Gerbing, 1988). The resulting measurement model retained 13 of the 20 items in the initial model and provided an acceptable fit ($\chi^2 = 98.40$, $df = 59$, $p < .001$; cumulative fit index (CFI) = .973). Items appear in the Appendix, and Figure 4 shows the final measurement model.

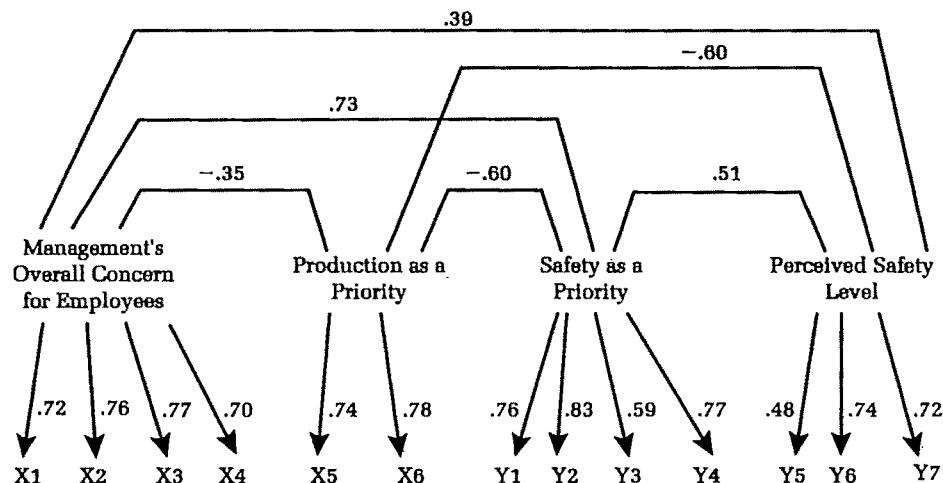
The measures showed acceptable convergent validity, with each being significantly related to its underlying factor. We assessed discriminant validity for the highly correlated constructs, organizational concern and safety emphasis ($r = .73$). A test of discriminant analysis (Bagozzi & Phillips, 1982) fixed the correlation parameter between the two factors at 1.0 and then employed a chi-square difference test on the values obtained for the constrained and unconstrained models. The chi-square of the unconstrained model (98.40, $df = 59$) was significantly lower than that of the constrained model ($\chi^2 = 207.99$, $df = 60$), indicating that discriminant validity between the overall level of management concern for employees and the extent to which safety was a priority was achieved (χ^2 difference = 109.59, $p < .001$).

Measurement Models of Multisample Analyses

United States–France. The results of a multisample, confirmatory factor analysis to test whether the U.S. and French data had the same factor pattern showed that in the French subsample the item, "When things go well in your job, is your contribution recognized?", an indicator of management's overall level of concern, had significant standardized residuals with other indicators (>2.00). The item, "I'm often worried about being injured on the job," an indicator of perceived safety level, failed to converge on the factor in the French data as its loading was .122. Because the results thus indicated that the items did not have the same meaning in France as in the United States, we dropped these items and replaced them with pseudo-variables (or constants) in the French data. Replacing an item with a pseudo-variable in one subsample takes into account the culturally specific ways in which an abstract construct may be manifested. After replacement, the analysis showed that both subsamples had a similar factor pattern ($\chi^2 = 138.66$, $df = 92$, $p < .01$). Figure 5 presents the measurement model of the French subsample.

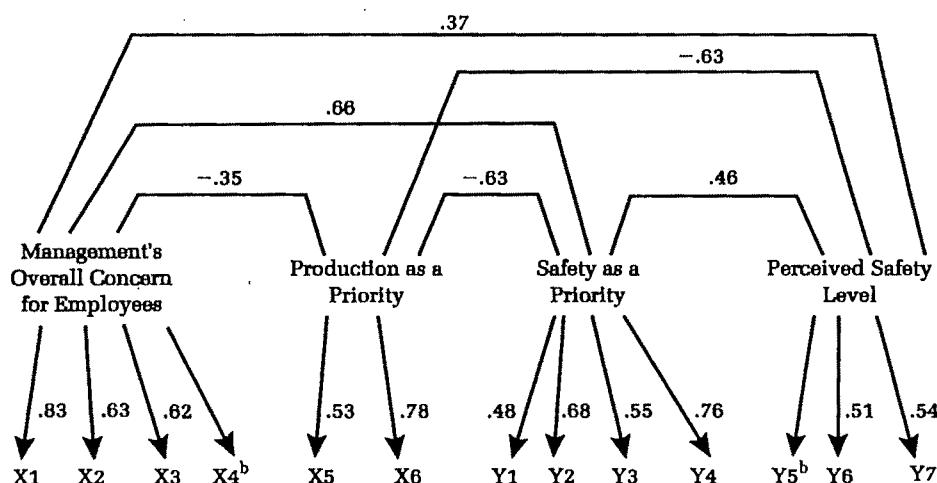
United States–Argentina. A multisample confirmatory factor analysis

FIGURE 4
Measurement Model, United States^a



^a Unconstrained model, $\chi^2_{59} = 98.40$, CFI = .973; constrained model, $\chi^2_{60} = 207.99$, CFI = .898; difference, $\chi^2_1 = 109.59$.

FIGURE 5
Measurement Model, France^a



^a Unconstrained model, $\chi^2_{38} = 40.24$, CFI = .895; constrained model, $\chi^2_{39} = 94.44$, CFI = .897; difference from U.S., $\chi^2_{92} = 138.66$.

^b Variables were pseudo-indicators.

showed that the item, "Management here does not cut corners where safety is concerned," an indicator of safety having a high priority in the U.S. data, did not show convergent validity in the Argentine data as it had a loading of $-.038$ on the construct safety priority. After we replaced the item with a pseudo-variable in the Argentine data, the multisample analysis showed an acceptable fit ($\chi^2 = 151.23$, $df = 105$, $p < .01$). Figure 6 presents the measurement model of the Argentine subsample.

Structural Model of the U.S. Sample

The sequential chi-square differences supported the validity of the structural model ($\chi^2 = 173.91$, $df = 62$, $p < .0001$, CFI = .923). Table 2 presents the parameter estimates. The results supported Hypotheses 1, 2, and 3 for the U.S. model. There was a positive relationship between management's overall concern for employees and the extent to which safety was a management priority. Although, as hypothesized, a strong management emphasis on safety increased the perceived safety level, management's emphasis on production decreased the safety level.

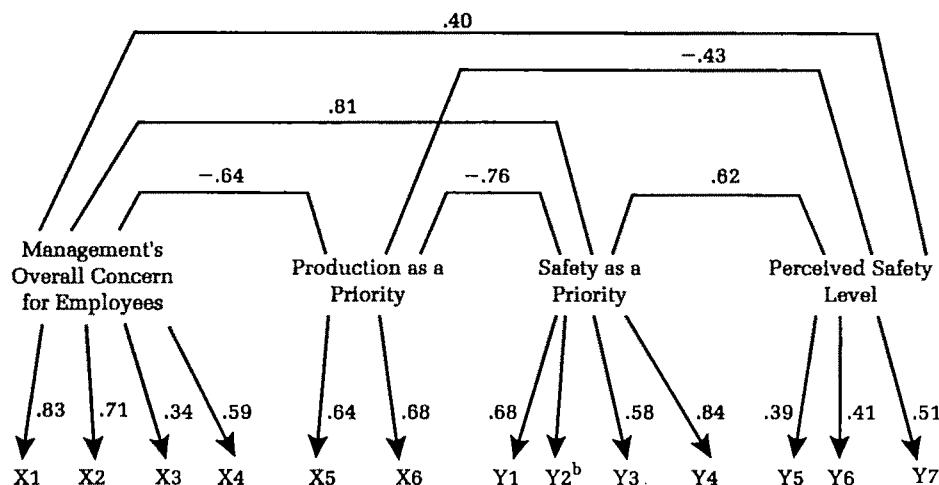
Structural Models of Multisample Analyses

United States–France. Table 2 presents the results of testing the structural model. As we expected, in France, the influence of emphases on safety and production on the perceived safety level was similar to that in the United States. However, as hypothesized, management's overall concern had a weaker influence on the extent to which safety was priority in the French data than in the U.S. data.

The similarities and differences between the U.S. and French structural models were tested by multisample analysis. Table 3 presents results of the chi-square difference tests. First, we set the structural coefficients of the French model equal to those in the U.S. model. This fully constrained multisample analysis fit very badly ($\chi^2 = 559.26$, $df = 131$). Next, we allowed for a free estimation of the structural coefficients in the French model. Relaxing all equality constraints gave a chi-square of 293.93 ($df = 128$). The difference between these two chi-squares (265.33) is itself distributed as a chi-square, with 3 degrees of freedom, or the difference between the degrees of freedom of the two multisample analyses. This chi-square difference can be used as a test of the hypothesis that the structural coefficients in the French and U.S. models are equal. The chi-square of 265.33 ($df = 3$) was higher than the critical chi-square of 7.82 ($df = 3$), which means that the overall structural French and U.S. models are different.

Second, we tested the hypotheses that the structural relationship between management's overall level of concern and the extent to which safety was a priority differed by comparing the multisample analysis in which the French and U.S. coefficients were freely estimated ($\chi^2 = 293.93$) to the multisample analysis in which the structural coefficient of the French model between management concern and safety as a priority was freely estimated

FIGURE 6
Measurement Model, Argentina^a



^a Unconstrained model, $\chi^2_{48} = 52.82$, CFI = .988; constrained model, $\chi^2_{49} = 68.70$, CFI = .952; difference from U.S., $\chi^2_{105} = 151.23$.

^b Variable was a pseudo-indicator.

TABLE 2
Results of Tests of Structural Models

	United States	France	Argentina
Structural paths			
γ_{11}	.63	.30	.95
γ_{22}	-.32	-.20	-.05
β_{21}	.28	.27	.29
Model fit			
χ^2	173.91	93.38	105.37
df	62	41	51
CFI	.923	.90	.869

and the two other structural coefficients were set equal to those in the U.S. model ($\chi^2 = 296.97$). The difference between the two chi-squares (3.04) was not significantly higher than the critical chi-square of 5.99 ($df = 2$), indicating that the multisample analysis in which all coefficients were freely estimated and the multisample analysis in which only the coefficient hypothesized to be different was freely estimated were equivalent. This indicates that, as hypothesized, the inequality between the overall French and U.S. structural models was due to the management concern–safety priority coefficient.

United States–Argentina. Table 2 also presents results of testing the structural model for Argentina. The results supported Hypotheses 5 and 6. In the Argentine subsample, management's overall concern had a stronger influence on the extent to which safety was a priority, and production as a priority had a weaker impact on perceived safety level than in the U.S. subsample. There was no difference in the relationship between safety as a priority and perceived safety level.

Table 3 shows results of the chi-square tests in the U.S.–Argentina multisample analysis. The multisample analysis in which all structural coefficients were constrained to be equal fit very badly ($\chi^2_{129} = 515.54$). Relaxing all equality constraints gave a chi-square of 282.91 ($df = 126$). The difference in chi-squares (232.63) was higher than the critical value ($\chi^2_3 = 7.82$), which indicates that the structural models of the two groups were different. We tested Hypothesis 5 by comparing the multisample analysis in which all coefficients were freely estimated ($\chi^2_{128} = 282.91$) to the multisample analysis in which only the coefficient for the relationship between management concern and safety priority was freely estimated ($\chi^2_{128} = 286.88$). The difference between the two chi-squares (3.97) was not significantly higher than the critical chi-square of 5.99 ($df = 2$), indicating that the two multisample analyses were equivalent and that the structural relationship between management concern and safety as a priority was different for the Argentine and the U.S. subsamples.

Hypothesis 6, predicting a weaker relationship between production as a priority and safety level, was also confirmed. The difference in chi-square between the multisample analysis in which all coefficients were freely estimated ($\chi^2_{126} = 282.91$) and the multisample analysis in which only the coefficient for the relationship between production priority and safety level was freely estimated ($\chi^2_{128} = 288.20$) was tested. The difference between the two chi-squares (5.29) was not significantly higher than the critical chi-square (5.99, $df = 2$), indicating that the two multisample analyses were

TABLE 3
Results of the Multisample Analyses

Test	United States–France		United States–Argentina	
	χ^2	df	χ^2	df
1. All coefficients constrained	559.26	131	515.54	129
2. All coefficients unconstrained	293.93	128	282.91	126
3. Difference between 1 and 2	265.33	3	232.63	3
4. Coefficient of path between management concern and safety priority unconstrained	296.97	130	286.88	128
5. Difference between 2 and 4	3.04	2	3.97	2
6. Coefficient of path between production priority and safety level unconstrained			288.20	128
7. Difference between 2 and 6			5.29	2

equivalent and that the production priority–safety level coefficient was different for the Argentine and the U.S. data.

DISCUSSION AND CONCLUSIONS

This study showed that blue-collar workers in the United States, France, and Argentina perceived a U.S. multinational's corporation-wide safety policy differently. The results indicated that the relations between the constructs implied by the policy differed with cultural differences between the United States and the other two countries.

Individualism/collectivism, managerial style, and decision-making structure were predictors of differences in the structural relationships between management's overall concern for employees and the extent to which safety was a priority in France and Argentina, as compared to the United States. Because both the United States and France are individualist countries, they share a management style of achieving control (Poole, 1986). However, the decision-making structure in the two countries differs. In France, the diffusion of responsibility with respect to safety management appeared to weaken the influence of management's overall level of concern on the extent to which safety was a priority. The collectivist orientation of Argentina was reflected in a paternalistic management style combined with a welfare-oriented decision-making structure. This paternalistic orientation of management toward its employees contributed to management's overall concern for employees having a strong effect on the extent to which safety was a priority.

Variations on individualism/collectivism also contributed to differences in the structural relationship between an emphasis on production and perceived safety level in the United States and Argentina. Blue-collar workers in the latter, a collectivist country, seemed to perceive production as everyone's responsibility, which decreased the influence of the extent to which production was a priority on perceived safety level.

The confirmation of our hypotheses indicates that the data were consistent with the inductively developed cultural profiles of the three groups. Because we based the profiles on archival data, confirmation of the hypotheses does not rule out the possibility that the inductive characterization of the cultural groups may be invalid. However, the fit between data and hypotheses indicates that the sample was consistent with the inductively developed cultural profiles.

These results call into question the possibility that a single corporation-wide human resource policy will have the same effects in different nations. Cross-cultural differences predicted the ways in which workers saw the causal relations among aspects of a corporate safety policy. This finding reflects the basic tension multinational organizations experience in trying to manage the "external-outside" and "internal-outside" human resource management fit simultaneously (Milliman, Von Glinow, & Nathan, 1991: 322; Rosenzweig & Singh, 1991). The implementation of a corporation-wide pol-

icy reflects internal-outside fit, which involves the congruence of human resource functions at the corporate and foreign subsidiary levels. The differences in the causal relations underlying the corporation-wide policy refer to external-outside fit, which concerns the relationship between human resources practices and a firm's cross-national and cross-cultural environment. Here, fit between local management styles and the firm's cross-national environment seemed closer than that between corporate policy and foreign subsidiary policy. These results suggest that multinational companies may need to recognize that their policies reflect assumptions and values of their home cultures that may not generalize to their international facilities. Policies need to be in line with overall corporate strategies and cultures, but they also need to take into account the different assumptions and value systems of the national cultures of the subsidiaries in which they are to be implemented (Schneider, 1986).

If management practices are culturally limited, the broader question of the applicability of management theories developed in the United States and exported to other countries and cultures arises. The United States is the major exporter of modern organizational theories, but the extreme level of, for example, its individualism in comparison to most other countries makes the relevance of some of its theories in other cultural environments doubtful (Hofstede, 1980).

This study also illustrated the appropriateness of the use of multisample analysis in structural equation modeling (Jöreskog & Sörbom, 1989) as a tool for conducting confirmatory cross-cultural research. This technique addresses both construct validity and confirmation of hypotheses, two important issues in attributing results to cultural effects (Lytle et al., 1994).

First, construct validity is determined by the measurement model portion of multisample analysis. The measurement model is a confirmatory factor analysis that compares the factor structures among the different cultural groups. In addition, this technique allows for the inclusion of some emic measures, or measures unique to a given culture, for which there are no equivalents in other cultures. Here, we replaced emic measures by pseudo-indicators in cultural subsamples if items were not valid. This technique allowed us to describe phenomena that are meaningful to members of a given culture while comparing the phenomena across cultures to, in essence, establish construct validity (Berry, 1980; Hulin, 1987).

Second, this study tested specific hypotheses about similarities and differences within the structural model. The advantage of structural modeling over traditional methods such as simple *t*-tests and regression analysis is twofold: the relationship between one construct and other constructs can be tested without the bias that measurement error introduces, and an overall measure of model fit is derived (Steenkamp & van Trijp, 1992). Because it allows examining all the proposed relationships among constructs in one test, structural equation modeling is like testing all the regression equations in a path analysis at once.

Overall, this study questioned the cross-cultural generalizability of the

human resource policies of multinational organizations. Given its scope, the study examined only one policy of one company in three countries. The results do not rule out the possibility that some companies may be successful in imposing consistent human resource policies in different countries. However, the findings do show that the relationships underlying a human resource policy are perceived differently in different countries and that these differences are predictable, on the basis of generally available knowledge about cultural similarities and differences. Future research definitely has a major task in examining whether assumptions about relationships underlying policies generalize across cultures and why they do or do not.

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APPENDIX

Measures, U.S. Data

Responses were from 1, strongly disagree, to 5, strongly agree, unless otherwise noted.

Management's Overall Concern

- I am satisfied with the way the company deals with employee complaints.
 It seems to me, top management of the company is in touch with the concerns and problems of the people at my level in the organization.
 At this time, how would you rate the morale of employees you work with? (1, very low, to 5, very high).
 When things go well in your job, is your contribution recognized?

Production as a Priority

Supervisors seem more concerned about their production performance than safety performance.

Management here definitely puts production, cost, and quality ahead of safety.

Safety as a Priority

Management clearly considers the safety of employees most important here.

Management here does not cut corners where safety is concerned.

The equipment used here is good and well taken care of.

Management here does all it can to prevent accidents.

Perceived Safety Level

I am often worried about being injured on the job.^a

In my opinion, my work environment has or will have a serious effect on my health.^a

How do you feel about your overall work environment? (1, very hazardous, to 5, very safe).

^a Item was reverse-coded.

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INTERNATIONAL EXPANSION STRATEGY OF JAPANESE FIRMS: CAPABILITY BUILDING THROUGH SEQUENTIAL ENTRY

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This study examined the sequential entry process of Japanese electronic manufacturing firms into the United States during the period 1978–89. The firms first entered their core businesses and those in which they had a strong competitive advantage over local firms to reduce the hazard of failure. Learning from early entries enabled them to launch further entries into noncore businesses and into areas of weaker competitive advantage. The overall evidence suggests that Japanese firms are building capabilities to operate overseas through sequential entry.

Building a network of foreign operations through overseas direct investment is an important aspect of a firm's global strategy. Firms become multinational through foreign direct investment. The cumulative flow of foreign direct investment into the United States, measured as a percentage of the total net worth of all nonfinancial U.S. corporations, more than quadrupled from 1977 to the end of 1988, when it stood at 8.9 percent (Graham & Krugman, 1989). This figure shows the United States, which is the home country of many large multinational enterprises, has also become an essential place to set up foreign operations for the multinational enterprises of other nationalities. Managers of multinational enterprises emphasize the importance of the U.S. market, noting the advantages of its size, sophisticated and cost-conscious consumers, continuous technological innovations, and openness to global competition. Since the U.S. market serves as a critical test ground for global competition, firms have realized the need to have a strong base in the United States.

Although direct investment in the United States by foreign firms in general was relatively stable during the late 1970s and 1980s, Japanese firms have continuously increased direct investment. The Japanese share of accumulated foreign direct investment assets in the United States increased from 19 percent in 1980 to 31 percent in 1987.¹ During this period, Japanese

I would like to thank Gayle DeLong for her able research assistance. Comments from José Campa, Kiyohiko Ito, Bruce Kogut, Thomas Pugel, Philip Rosenzweig, and two anonymous referees are gratefully acknowledged.

¹ See Caves (1993) for a detailed survey of research on Japanese investment in the United States.

companies switched their mode of serving the U.S. market from exporting to foreign direct investment. The sharp appreciation of the yen during the period accelerated these investment activities by making yen-denominated U.S. assets relatively cheap.

In addition to its spectacular increase, Japanese direct investment in the United States merits special attention because of the pattern of sequential entry Japanese companies have used, developing local operations by incrementally increasing commitment to local markets. Western companies often make big investments in a short period of time, mainly through acquisitions, (Rosenzweig, 1993, 1994), but Japanese companies seem to favor frequent small investments made over a long period of time. Typically, Japanese companies make a small initial investment in their core businesses and expand their operations if this investment performs well. The companies might later make big investments and even diversify into new business areas through foreign entry.

Japanese firms are likely to use sequential entry and expansion over time because of their unique cultural and institutional environment. Kagano, Nonaka, Sakakibara, and Okumura (1985) described Japanese companies as "evolutionary firms" and American companies as "strategic firms." According to their study, the sense-making processes of Japanese companies are inductive and favor incremental changes, whereas Western firms take a deductive approach to formulating strategy and favor radical changes. They described American firms as typically seeking competitive advantages by emphasizing product-market strategies and implementing strategies in revolutionary ways. American firms also tend to evaluate their performance in terms of short-term financial results. Japanese companies have, however, gained competitive advantages by focusing their strategies on operations attempting to improve them incrementally. Such behavior on the part of Japanese companies fits well with the strategic option theory (Bowman & Hurry, 1993; Hurry, 1993; Kogut, 1983, 1991). The sequential investment process Japanese firms use is analogous to their exercising a series of "call options" over a long period of time while making the best use of learning from experience and taking the best opportunities that emerge along the way.

The idea that firms are making sequential foreign direct investments has been proposed earlier in the international business literature. Drawing on case studies of some Swedish multinationals, Johanson and Vahlne (1977) described this internationalization process: a firm starts by exporting to a country; then it sets up a selling subsidiary; finally, it builds a production subsidiary. Davidson (1980) showed that the prior presence of a firm in a country increases the likelihood of its investing there rather than in other countries.

Kogut (1983), however, pointed out that decisions to make direct foreign investments are not discrete but part of a series of decisions that determine the volume and direction of resource flows between countries. He observed that multinational firms often use earnings from foreign operations to invest

in another project in the same country or in other foreign subsidiaries. From his perspective, the multinational corporation is a collection of valuable options that permit the discretionary choice of moving real economic activities or financial flows from one country to another. Kogut and Kulatilaka (1994) presented a formal model of the option value of multinationality in which a multinational firm achieves operational flexibility by shifting production between two manufacturing plants in different countries on the basis of fluctuation in the exchange rate. Kogut and Chang (1994) presented a model in which a foreign firm switches from exporting to locating production in a local market, with the choice of mode determined by expectations about exchange rate dynamics, the firm's production function, and its current operating status. The investment made to allow serving a market through export serves as a platform for future expansion. Kogut and Chang showed that Japanese firms with previous investments in a foreign market, especially in export-related distribution facilities, were more likely to invest subsequently, given appropriate exchange rates.

This article builds upon the prior research on sequential investment and further develops sequential investment theory by applying the recent development of resource- and capabilities-based theory in the strategy field to the study of foreign direct investment. Prior research has looked either at a sequence in which a firm exports to a foreign country, sets up a sales subsidiary, and then adds a production subsidiary, or at a sequence in which a firm moves from one country to another. I focused on a sequence in which firms add lines of business in the process of building strong local organizations. This study examines how firms make sequential foreign entry: which business will be first, which next, and which will not be able to expand into a foreign country. In this theoretical framework, firms are sequentially approaching foreign entry with learning gained from past entry experience.

This study then applies this new perspective to the sequential direct investment activities in the United States by Japanese electronics manufacturing firms in the period of 1976 to 1989. The Japanese direct investment in the United States provides an ideal setting for research on sequential investment for several reasons. First, few Japanese firms invested in the United States prior to 1976, so their entry histories could be observed from a very early stage. Second, Japanese electronics firms are well diversified, so I could observe the sequence of entry among several lines of business and perform analyses at the line-of-business level, one level down from the firm level. Third, the time span 1976-89 includes events such as the U.S. exercise of protectionist measures directed at Japan and the sharp appreciation of the Japanese yen.

The results show that Japanese firms are sequentially entering businesses where they have a stronger competitive advantage over local firms and core business first in order to reduce the risk of failure. The learning from earlier entry experience enables firms to build organizational capabilities to operate overseas and to launch further entries into areas where they have less strong competitive advantages or into noncore businesses.

CAPABILITY BUILDING AND SEQUENTIAL FOREIGN ENTRY

Firms become multinational enterprises by building manufacturing or marketing subsidiaries overseas. The monopolistic advantage theory (Caves, 1971; Hymer, 1960) and the internalization theory (Buckley & Casson, 1976; Hennart, 1982) help explain motivations for going overseas: Firms invest overseas to exploit monopolistic advantages or to internalize markets for advantages or intermediate goods. Although there is a vast amount of research regarding motivations for foreign direct investment, the process of international expansion has not yet received enough attention from researchers. Understanding of that process can benefit from the recent development of the resource- or capability-based theory of firms.

Motivations for Foreign Entry

Earlier theoretical works have treated foreign direct investment as a kind of international capital movement subject to interest rate differentials but accompanied by varying degrees of control (Kindleberger, 1969). Since Hymer's (1960) original work, the research focus has shifted from macroeconomic conditions to the specific market structures of investing countries. After observing high correlations across industries between investing overseas and industry entry barriers, Hymer suggested that a monopolistic advantage encouraged firms to invest overseas. Caves (1971) reinterpreted this view, identifying the sources of monopoly power with rent-yielding intangible assets, such as technology or marketing skills—the knowledge base of a firm. Many empirical studies have confirmed the positive correlation between outward investment activities and intangible assets measured as R&D and advertising intensities (Kogut & Chang, 1991; Pugel, 1985; McClain, 1983).

In another important stream of research on foreign direct investment, multinational enterprises are seen as efficient agents for transferring resources (Buckley & Casson, 1976; Hennart, 1982; Magee, 1977; Rugman, 1981). A multinational enterprise minimizes transactions cost not only by internalizing technology or marketing know-how but also by internalizing sourcing of raw materials and intermediate goods (Hennart, 1982). Hennart and Park (1994) showed that the larger a Japanese firm's R&D expenditures, the greater the probability it would manufacture in the United States. Hennart (1991) and Hennart and Park (1993) examined the mode of Japanese entries into the United States from a transactions cost perspective and found that the higher the R&D expenditures, the more likely entry would be via "greenfield" operations rather than acquisition. R&D expenditures were not, however, related to decisions concerning the choice of a joint venture or wholly owned subsidiary structure.

Although the monopolistic advantage theory and the transactions cost theory explain foreign direct investment from different theoretical standpoints, they should be viewed as complements. The broader transactions cost theory explains several aspects of internalization, but the same variables

(R&D or advertising intensity) are often used to measure constructs derived from both theories. Technology and marketing know-how are intangible resources that generate monopolistic advantages and at the same time create needs for internalization because they are information-intensive assets. The same variables are also often used to explain diversification in strategy research from a resource-based theoretical perspective (Chatterjee & Wernerfelt, 1991; Montgomery & Hariharan, 1991).

In resource-based theory, a firm is viewed as a collection of productive resources (Penrose, 1959; Wernerfelt, 1984). These resources are worth more to the firm than their individual market values because of specialized linkages between them within the firm (Barney, 1986; Penrose, 1959; Rubin, 1973). Resource-based theory emphasizes the application of underutilized productive resources to new businesses. There are two immediate such applications: diversified entry into a related business area and entry into a foreign market. The dominant view in diversification research is that intangible resources, such as technology and marketing skills, encourage firms to diversify into new businesses in order to exploit the "public goods" nature of information-intensive assets (Chatterjee & Wernerfelt, 1991; Montgomery & Hariharan, 1991). In other words, the value of such assets does not depreciate through use in other markets, and they therefore generate natural economies of scope.

Exploiting existing technology or marketing skills in a foreign market also does not depreciate their value. It is interesting to note that both the international and diversified expansion of a firm can thus be explained from the same theoretical standpoint: existence of the same underutilized resources motivates both. Hymer's monopolistic advantage theory of foreign investment reflects the fact that firms are going overseas to exploit underutilized resources in new markets, thus giving themselves a monopolistic advantage. Caves's (1971) observations of the foreign investment of firms that possess information-intensive assets also reveal those assets as underutilized resources that can generate extra profits from use in foreign markets. Using industry-level data and measuring technical know-how by the percentages of scientists and engineers in an industry, Wolf (1977) showed that such information-intensive assets led to international expansion through export and direct investment as well as to domestic diversification into new business.

Moreover, information-intensive resources create a need for internalization since renting or licensing them through market transactions involves high costs. Often, information-intensive resources are embedded in the people working for an organization. The difficulties of codifying and transferring knowledge are well documented in Kogut and Zander (1993). Therefore, firms decide to use such resources through international expansion rather than by renting or selling them.²

² The information-intensive assets are not the only resources likely to be internalized in a

The preceding discussion suggests this reformulation:

Hypothesis 1: The more intangible resources a firm has, the more likely it is to invest overseas.

The Sequence of Foreign Entry

The rent-yielding intangible resources central to Hypothesis 1 are only a necessary condition for foreign investment. Their existence does not guarantee that entry into a foreign market will be successful. Entering foreign markets with cultural and institutional environments that differ from those of a firm's home market involves significant business risk. Hymer (1960) made the point that foreign firms have intrinsic disadvantages and further conjectured that they need monopolistic advantages over local firms to compensate for those disadvantages. Firms may have two ways to overcome the disadvantages inherent in foreignness. The first possibility is to possess competitive advantages over locals, as Hymer hypothesized. Another possibility is to gain competence in foreign operations and thereby reduce intrinsic disadvantages over time. Therefore, the sufficient condition for successful direct investment should be either superior competitive advantage or accumulation of competence in foreign operations.³

Traditional resource-based theory tends to focus on exploiting competitive advantages rather than building organizational capabilities. The theory can explain why firms invest overseas but does not provide any insights into how firms accumulate capabilities (March, 1991). A firm following Johanson and Vahlne's (1977) model progresses from initial export to establishing sales and, later, production subsidiaries, thus gradually acquiring knowledge of the foreign market and incrementally increasing commitment to it. Yu (1990) showed that international operations experience, measured as the ratio of a firm's foreign to total sales, increases the likelihood of its direct investment.

This study further develops the Johanson and Vahlne framework by bringing in a relatively new strategic perspective that emphasizes organizational learning from entry into new markets. Teece, Pisano, and Shuen (1990) defined internal capabilities as tangible or intangible assets that are firm-specific and created over time through complex interactions among resources. Prahalad and Hamel (1990) proposed that organizational learning can occur from firms' acquiring new and complementary competences, a possibility not directly emerging from the idea of resource utilization. The capability-building perspective emphasizes organizational learning as an important feature in the evolution of rent-generating capabilities.

Chang (1992) and Singh and Chang (1992) applied the capability-based

transactions cost framework; others are intermediate goods, raw materials, and trade barriers. However, the focus of this article was rent-yielding information-intensive resources.

³ In a similar logic, the benefit from internalization should be greater than the cost of running a local operation.

theory to the study of diversification. Managers of firms cannot be certain about the success of their ventures in new areas. Consequently, the creation of a new line of business can be represented as a sequential process in which initial exploration is followed by feedback on performance and the fit between the venture's key success factors and the firm's capabilities. The outcome is either expansion or exit, depending upon whether the firm is successful in developing the capabilities necessary to build and maintain a competitive advantage in the new domain. Therefore, when a firm enters a new business, it starts with a small investment into an area more or less related to its core business. It then moves into another, less related area, and the scale of investment grows over time. With each entry, the firm learns from past mistakes and revises its expectations. This notion of learning is consistent with Argyris and Schon's (1978) "error detection and correction in theories-in-use." The rationale for this sequential approach to diversified entry is to learn from small-scale entry in a related area and thereby reduce the risk of failed entry. My earlier work (Chang, 1992) showed that firms sequentially enter new businesses, beginning with related ones and moving to less related ones over time. As learning or experience accumulate, firms can enter even unrelated areas in a sequence of several intermediate steps. Singh and Chang (1992) demonstrated that firms that enter new businesses in an orderly manner show higher profits than firms whose entry patterns appear to be random.

Capability building in foreign entry resembles the sequential approach to diversified entry described earlier. Some of a firm's lines of business may have stronger international competitiveness than others. In this study, I postulate that firms will start foreign ventures in business areas in which they have the strongest competitive advantage over local firms and move into those in which they are weaker. Lines of business in which firms do not possess any competitive advantage over local firms may not invest in foreign countries. If an entry into an area in which a firm has the strongest competitive advantage over local firms fails, the firm will not invest any further. Over a series of entries, the firm will learn about foreign operations and acquire necessary skills, knowledge that will enhance the likelihood of the success of entries into product lines in which it has few competitive advantages. For similar reasons, I also expected that firms will initiate foreign ventures from core businesses, where their resources are concentrated, moving to noncore businesses over time. This logic of sequential foreign entry is consistent with that of the sequential diversified entry approach I proposed in an earlier study (Chang, 1992).

The noted sequential pattern is commonly found in other investment activities of Japanese companies. Hurry, Miller, and Bowman (1992) observed a very similar pattern among Japanese high-technology venture capitalists, who have a larger number of smaller ventures than their American counterparts. Japanese companies tend to have long-term strategic objectives for ventures, and American companies tend to have short-term financial goals. The researchers found that Japanese companies culminated their ven-

ture investment either by retaining their stock or by entering into contractual business relations with the ventures, but U.S. firms tended to dispose of their shares following the ventures' initial public stock offerings. From their perspective, Japanese firms viewed venture capital investment as a series of implicit call options embodying the right to acquire and expand the ventures if the opportunity arose.

Japanese sequential direct investment can be viewed as the exercise of a series of strategic options. A firm purchases an implicit call option to expand U.S. operations by making an initial investment in a core business, bringing in other lines of business in a sequential manner. Later, the U.S. operation can be used for sourcing local talent or skills by acquiring U.S. companies and transferring local knowledge back to the home organization. The ability to learn from prior experience helps managers recognize the options and exercise them. Therefore, the organizational capability building becomes a precondition of taking full advantage of the value of strategic options (Bowman & Hurry, 1993).

Hypothesis 2a: Firms will sequentially enter a foreign market, moving from lines of business that have strong competitive advantages over local firms to lines of business that are less competitive.

Hypothesis 2b: Firms will sequentially enter a foreign market, moving from their core businesses to noncore businesses.

Learning from Experience and Learning from Other Firms

As firms follow the hypothesized sequence, their intrinsic disadvantages in a foreign market may disappear or be substantially diminished because their capabilities improve through accumulating knowledge. Thus, I would expect to see more active further investment from firms with a high level of past investment. Wilson (1980) confirmed the influence of previous experience, measured by the number of years a firm had been multinational. Yu (1990) found an experience effect by measuring whether firms had subsidiaries in neighboring countries. Hennart and Park (1994) found a significant experience effect with a dummy variable that signaled whether a Japanese firm had previously produced a product in the United States. Kogut and Chang (1994) found that firms with many previous investments were more likely to invest subsequently.

Hypothesis 3: As firms accumulate investments in a foreign market, they become likely to invest further in that market.

Hypothesis 3 predicts that firms learn from their own experience. They can also learn from other organizations without being directly involved in foreign entry, capturing experience through the transfer of technologies, codes, procedures, and similar routines (Levitt & March, 1988). Such learning is illustrated by the diffusion of innovation among organizations. Mans-

field (1982) studied the spread of new technologies among firms through diffusion and imitation. Fligstein (1985) interpreted the diffusion of multi-divisional organizational structure among American firms as a process of imitation. However, learning from other firms is not without costs. Cohen and Levinthal (1990) coined the term "absorptive capacity" to describe the ability to assimilate learning from other firms.

Japanese firms are well known for their complex web of corporate networks, termed *keiretsu*. A typical *keiretsu* consists of banks, a *sogo shosha* (trading company), and various manufacturing companies. Besides these horizontally connected business groups, there are also vertically connected business groups with big manufacturing companies at the core and suppliers at the periphery. Such a network of companies represents a network of knowledge (Imai, 1987). Members of the same business group often share research and investment and exchange personnel and information. Thus, a firm could easily transfer knowledge about foreign operations to other firms in the same business group. As the president of the Mitsubishi Semiconductor noted, "When we came to the United States, we asked other Mitsubishi companies to support us. If we had to develop everything from scratch or ask other (outside) companies we are not familiar with, it would be more difficult" (*Business Week*, 1990: 102). Such transferred knowledge can help firms to overcome intrinsic disadvantages and to enter foreign markets successfully.⁴ From the strategic options perspective, such knowledge transfer within *keiretsu* lowers the risk of foreign direct investment and thus promotes more entry.

Hypothesis 4: Firms associated with business groups are more likely to invest overseas than independent firms.

Industry and Macroeconomic Effects

Another stream of research on foreign direct investment addresses how industry structure conditions the likelihood of entry. Knickerbocker (1973) interpreted the bunching pattern of foreign investment as a consequence of a loosely coupled oligopolistic market structure. Vernon (1966), followed by Flowers (1976) and Graham (1978), formally modeled direct investment as based upon oligopolistic rivalry. These authors have contended that firms are more likely to invest overseas in an oligopolistic market structure. In addition, quotas, other trade barriers, and macroeconomic effects will prompt direct investment. Appreciation of a home currency will deteriorate the terms of trade and encourage firms to switch from exporting to direct investment. Lower factor costs in the foreign than in the home country

⁴ There is an alternative hypothesis that business group members are more likely to invest overseas to support the foreign operations of other member companies. This is especially so for firms in the vertically connected *keiretsu* that supply parts or intermediate goods to other firms in the same *keiretsu*, who often follow their customers. For instance, suppliers of Toyota may follow Toyota's manufacturing plants to the United States. Even in that case, the assemblers might provide assistance to their suppliers.

should increase the attractiveness of direct investment. Although labor costs are similar in Japan and the United States, Japan has experienced a decline of its cost competitiveness against the United States since 1985, mainly because of the sharp appreciation of the yen.

RESEARCH DESIGN

Sample

The study of foreign direct investment has traditionally employed industry- or country-level analysis, partly because it is difficult to collect firm-level information. To reduce this difficulty, I restricted the sample to a single, albeit broadly defined, industry, electronics, and to companies listed in the first section of the Tokyo Stock Exchange. The electronics industry in the Japanese standard industry classification includes electric and electronic machinery, equipment, and supplies, manufacturers (equivalent to the two-digit U.S. Standard Industrial Classification (SIC) code⁵ 36), as well as providers of electronic computing equipment (SIC 3573), electronic automobile parts (part of SIC 3714), some electronic measuring instruments (SIC 3825), and electronic medical equipment (SIC 3841). As of 1985, there were 98 companies listed in the first section of the Tokyo Stock Exchange whose main businesses were classified as electronics and electrical machinery. Of the 98, we identified 3 as subsidiaries of foreign multinationals and excluded them from our sample, leaving 95. Kogut and Chang (1994) used the same set of the Japanese electronics companies.

To refine the analysis of sequential foreign entry to the line-of-business level, for this study I collected data from the annual reports of individual companies, the *Japan Company Handbook*, and the *Principal International Directory* and broke sales during 1976–89 down by businesses using U.S. SIC three-digit categories to define lines of business. I then collected the foreign direct investment activities in the United States for each line of business defined earlier as U.S. SIC three-digit industry. The 95 sample firms were generally very well diversified, with a total 302 lines of business, a per firm average of about 3 lines of business. Big firms had up to 13 lines, but 10 firms were single businesses with no evidence of diversification.

Raw data on Japanese entries into the United States during the period were collected by the International Trade Administration at the Department of Commerce and published annually in *Foreign Direct Investment in the United States*, which gives a date and four-digit SIC code for each entry event. I defined direct investment as setting up a foreign subsidiary by establishing a new plant, entering a joint venture, or acquiring a firm. An investment that expands an existing plant is also identified as a foreign investment. I excluded investments in real estate, and those that merely increased equity from previous investment. I also excluded diversified for-

⁵ The 1982 version of the SIC system was used throughout the research.

eign entry, which constitutes entering a new line of business rather than foreign expansion of an existing line of business.⁸ For example, Sony's acquisition of CBS Records was an entry into a new business area by investing in a foreign country (by acquiring a foreign firm in a new business area). Also, I excluded entries into nonmanufacturing industries (these mainly occurred in distribution). Since I defined line of business at the three-digit level and analyzed investment activities for each line, assigning distribution to a particular line presented difficulties as such investment serves as a common platform for all lines of business. Moreover, for nonmanufacturing activities vital information on such industry characteristics as demand growth and market concentration were lacking. However, I did include nonmanufacturing entries when calculating the accumulated entry variable.

Among the 302 lines of business, 76 experienced a total of 201 occurrences of direct investment in the United States during the time period studied (see Figure 1). Those 76 lines of business belonged to 35 companies. The other 60 Japanese electronics companies did not undertake any direct investment in the United States. In many instances, a firm made several direct investments for some lines of business. The remaining 226 lines—including 159 lines that belonged to 60 firms with no investment and 67 lines that belonged to 35 firms with investment in other lines—did not experience any direct investment during the period.

A repeated hazard model was used for analysis. For a line of business in which there were several direct investments, the interval (or spell) between investments constituted an observation. The time elapsed from the last investment, or from 1976, for firms with no investments before 1989, the end of the study's time period, also constituted an observation. For example, suppose the first line of business (LOB 1) of firm A in Figure 1 has had three incidents of direct investment, in 1979, 1983, and 1987. The three incidents generate four observations: The first observation, from 1976 to 1979, is three years; the second is four years; the third is also four years; and the last, censored observation, from 1987 to 1989, is two years. Likewise, firm A's second line has two distinct time spells, 1976 to 1982 and 1982 to 1989. Even when a firm did not make any direct investment in a line of business between 1976 and 1989 (for example, LOB 3 of firm A or LOB 1 of firm B), I added the 14 years between 1976 and 1989 as an observation. Thus, the valid cases of distinctive time spells total 503 (201 cases of actual entries and 302 observations resulting from censoring).

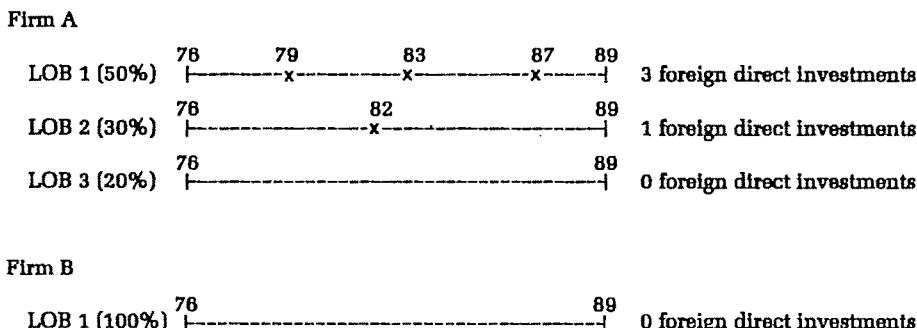
Measurements

Four sets of variables were used in this study, including line of business, firm, industry, and macroeconomic measures. Table 1 provides descriptive statistics.

Line of business variables. Size and competitive advantages were mea-

⁸ There are 24 cases of such diversified foreign entry.

FIGURE 1
An Illustration of Sample Composition in a Repeated Hazard Model



sured at this level. Size was sales of a line of business as a proportion of total sales, normalized for each firm by dividing it by the average size of the firm's lines of business to control for level of diversification. For instance, if a line of business accounting for 40 percent of a firm's total sales is deflated by 30 percent, the average size of the businesses of that firm, line of business size is 1.33 (40%/30%).

Competitive advantages in R&D and advertising at the line-of-business level were calculated as Japanese firm-level R&D (or advertising) intensity minus industry-level U.S. R&D (or advertising) intensity for each three-digit line of business. Japanese R&D and advertising intensity were defined as firm-level expenditures on R&D and advertising deflated by total sales averaged for the period 1976–89. Data on R&D and advertising expenditures were from annual reports, the *Japan Company Handbook*, and the *Analysts' Guide*. Data on the industry-level R&D and advertising intensities of U.S. firms were collected from the COMPUSTAT aggregate file.

I used firm-level intensity for the Japanese companies because it is difficult to gather line of business spending on R&D and advertising for Japanese companies. This substitution relies on the assumption that firm-level spending is contributing technological knowledge equally to every line of business of a firm. This is a reasonable assumption for Japanese companies, which usually use centralized R&D laboratories and allocate R&D budgets to firms but not to individual lines. Advertising efforts are also at the firm level, and each line of business benefits from the marketing know-how and brand loyalty created by the centralized advertising.⁷

Firm variables. Hypothesis 3 predicts that firms that have accumulated previous entry experience are more likely to initiate further entries. A pri-

⁷ Scott (1993: Chapter 7) provided some empirical support for this assumption. Using the Federal Trade Commission's line of business database, he found that company effects explained 32 percent of the variance in R&D at the line-of-business level and that industry effects explained another 16 percent.

TABLE 1
Descriptive Statistics and Correlations^a

Variables	Means	s.d.	Lowest	Highest	1	2	3	4	5	6	7	8	9	10	11	12
1. Line of business size	1.10	0.76	0.01	4.01												
2. R&D advantage	-0.01	0.02	-0.10	0.05	-.11											
3. Advertising advantage	-0.00	0.01	-0.04	0.04	-.09	.15										
4. R&D intensity	0.03	0.02	0.00	0.08	.02	.59	.04									
5. Advertising intensity	0.01	0.01	0.00	0.04	.10	-.14	.24	.05								
6. Accumulated entries	9.24	10.24	0.00	40.00	-.05	.34	.04	.45	.05							
7. Export ratio	0.29	0.28	0.24	0.95	-.16	-.17	-.17	.07	.61	.10						
8. Horizontal business group	0.48	0.50	0.00	1.00	.01	.24	.10	.36	-.21	.22	-.26					
9. Vertical business group	0.29	0.45	0.00	1.00	-.02	-.09	-.08	-.07	.17	.09	.12	-.60				
10. U.S. shipment growth	0.11	0.10	-0.04	0.36	-.01	-.39	.02	.15	.06	.04	.07	.03	.02			
11. Japanese concentration	84.88	9.42	31.80	100.00	.01	.16	.12	.06	-.03	-.01	-.06	-.02	.01	.21		
12. U.S. concentration	56.22	11.79	18.36	86.00	.09	.02	-.54	-.04	.12	.02	.18	-.23	.14	.01	.45	
13. U.S. import penetration	23.69	23.39	0.00	77.82	.20	-.28	-.71	.04	.25	.02	.41	-.16	.14	-.03	-.25	-.30

* N = 421. Two time-varying covariates, quota and exchange rates, could not be included in this table.

mary dilemma in the analysis was sorting out the effects of firm size from those of number of previous entries. I measured company size as the logarithmic transformation of total assets. As Kimura (1989) found for Japanese semiconductor firms, larger companies are more likely to engage in investment activity overseas. Because of multicollinearity between firm size and the accumulated count of previous entries ($r = .81$), I dropped the firm size variable in favor of the accumulated entry variable, defined as the number of a firm's previous entries at the time of a new entry.

Following the arguments of resource-based theory, I expected that firms that had underutilized rent-yielding information-intensive resources would be more likely to invest in the United States. Export ratio was measured as the average ratio of foreign sales to total sales over the study period. The export ratio reflects a firm's international business activity before switching to direct investment as well as international experience (Terpstra & Yu, 1988; Yu, 1990). All financial information was from the *Analysts' Guide* by the Daiwa Research Institute.

Hypothesis 4 explores whether business group membership will help a firm build up overseas subsidiaries. I collected business group membership information from the *Industrial Group in Japan*, published by Dodwell Marketing Associates. There are two types of business group in Japan.⁸ First are horizontal intermarket structures centered around the major banks, insurance companies, general trading companies, and large manufacturing firms. According to the Dodwell directory, there are eight such horizontally connected groups—Mitsubishi, Mitsui, Sumitomo, Fuyo, DKB, Sanwa, Tokai, and the Industrial Bank of Japan. The first three groups are the postwar reconstruction of the family-owned business groups termed *zaibatsu*. The other five horizontal business groups, formed after the war, center around major banks. The other type, which includes 31 major groups, is a vertical structure centered around a big manufacturing firm. For example, Hitachi and the Matsushita Electric Company are connected with their own suppliers and subcontractors. Many firms in the sample have grown out of the suppliers of such big manufacturing firms and are still associated with a vertically connected business group.

Business group membership was measured by dummy variables for association with a horizontal or a vertical business group. Since the transfer of experience or learning is possible only when other business group members have made prior investments, I assigned either variable a value of 1 only after some other group member had invested in the United States.⁹

⁸ See Imai (1987) for more details on Japanese business groups.

⁹ Learning from other firms in the same business group may increase with the number of previous investments by other group members. I tested this conjecture by adding a variable counting such previous entries; it had a significant, negative relation with the likelihood of entry. My speculation is that the accumulated entries of other firms in the same *keiretsu* as a given firm may not matter. But results of a test of whether learning depended more on how

Industry characteristics and exchange rates. In an oligopolistic industry, when a firm starts to invest abroad, other firms in the same industry tend to follow suit (Knickerbocker, 1973; Yu & Ito 1988). Flowers (1976) found that this oligopolistic reaction is a quadratic function of industry concentration, peaking at the medium level. Thus, I used Japanese eight-firm industry concentration ratios constructed from the *Shuyo Sangyoni Okeru Seisan Shuchudo to Herfindahl Index no Suui* (Trends in Production-Based Concentration Ratios and Herfindahl Index for Major Industries), published by the Japanese Fair Trade Commission. U.S. eight-firm concentration and import penetration variables were used to measure various aspects of entry barriers to foreign firms (McClain, 1983; Pugel, 1985); these were from the 1982 *Census of Manufacturing*, Department of Commerce. I included U.S. shipment growth in the regression equations to capture the importance of demand growth leading to the opportunity to invest, calculating shipment growth and import penetration from unpublished data obtained from the Department of Commerce.

Kogut and Chang (1991) and Drake and Caves (1992) found that voluntary export restraints and other trade restrictions promote entry. Trade restrictions affected three industries in our sample—television, semiconductors, and electronics automobile parts—during the study time period. Specifically, the Orderly Marketing Agreement between the United States and Japan was in effect for the importation of Japanese color televisions from 1977 to 1980. A similar agreement for semiconductor products has been in effect from 1986 to the time of this writing. Voluntary export restraints on Japanese-built automobiles, including electronic parts and components, were effective from 1981 to 1991.¹⁰ A time-varying dummy variable, with 1 denoting the existence of a trade restraint for the specific year in the specific industry, was used.¹¹ The effects of exchange rates on direct investment were measured by actual yen per dollar rates. Actual yearly exchange rates were from the 1991 *International Financial Statistics Yearbook*, published by the International Monetary Fund. The exchange rate variable was also allowed to vary across time.

Model

In this study, I estimated a model of Japanese direct investment by a partial likelihood hazard specification using repeated measures (Cox & Oakes, 1984; Kalbfleisch & Prentice, 1980). The dependent variable is a

closely a firm was tied to its keiretsu, measured as the ratio of the keiretsu's shareholding in a firm to the total shares held by its top ten shareholders, were significant and positive.

¹⁰ See Hufbauer, Berliner, and Elliot (1986) and Yoffie (1993) for more detailed information on the trade restrictions levied on each industry.

¹¹ The effects of such trade restrictions may exist before they are officially implemented or persist after they are officially removed. Given such possibilities, the tests with time-varying covariates should be considered conservative.

hazard rate that denotes the likelihood of a firm's investing in a line of business at a given time. Cox's model estimates the influence of explanatory variables (or covariates) on a hazard without specifying a parametric form for precise time. Instead, it ranks events (here, direct investments) temporally. Thus, hazard rates are presumed to be represented by log-linear functions of the covariates. If $h(t; Z_i X_i(t))$ is the hazard function for an individual with time-invariant covariates vector Z and time-varying covariates $X(t)$, the proportional hazard model specifies this hazard as the likelihood that the observed direct investment event will have taken place, conditional upon the hazards of all firms at risk. This formulation leads to the following specification of the likelihood for the i th firm:

$$L_i(t) = h_o(t) \exp(\mu_i Z_i + \beta_t X_i(t)) / h_o(t) \left[\sum_{j \in R_t} \exp(\mu_j Z_j + \beta_t X_j(t)) \right],$$

where $h_o(t)$ is the baseline hazard rate at time t ; j is an index for firms at risk at time t (R_t being the risk set); Z_i are independent variables for individual firm i that are constant over time; $X_i(t)$ are the time-varying covariates for firm i ; and μ and β are coefficients to be estimated. Exchange rates, the existence of any trade restrictions, and the accumulated entry count (though fixed for the duration of each spell) were the only time-varying covariates used in this study; over-time variations in the other variables were of small magnitude. With this formulation, the model calculates the ratio of the hazards as the conditional probability of an investment.

This model contains two assumptions: (1) a multiplicative relationship between the underlying hazard rates and the log-linear function of the covariates (the proportionality assumption) and (2) a log-linear effect of the covariates upon the hazard function. These two assumptions enable the model to leave the baseline hazard unspecified. Thus, no bias is incurred by misspecifying the stochastic process of the underlying hazard rate. This generality is achieved by assuming further that the baseline hazard rate is the same for all firms in the risk set. From this assumption, $h_o(t)$ cancels out and the likelihood function can be rewritten as

$$L_i(t) = \exp(\mu_i Z_i + \beta_t X_i(t)) / \left[\sum_{j \in R_t} \exp(\mu_j Z_j + \beta_t X_j(t)) \right],$$

Rewriting the likelihood function is equivalent to allowing only the conditional probabilities to contribute to the statistical inferences. Multiplying these probabilities together for each of the distinct time spells gives the partial likelihood function to be maximized. No information on the precise time of entry is required, providing a partial maximum likelihood estimate, which involves an efficiency loss because the exact investment time is not considered. Nevertheless, the estimates are consistent and asymptotically normally distributed. The t -values can be interpreted as asymptotically close to the full maximum likelihood estimates. (For more detailed information on the assumptions of the model, see Cox and Oakes [1984].)

Since there were few Japanese investments in the United States before

1976, left censoring did not pose a serious problem; there is no correction in the specification. I handled right censoring, caused by truncating the observation period at 1989, by conventional adjustments. Censored observations enter the risk set at each time period under observation but do not contribute to the numerator of the likelihood function. However, in a repeated hazard framework, the risk set remains the same, with alterations entering only through changes in exchange rates and in the updated count of previous entries.

RESULTS

Table 2 presents the results for the repeated hazard model from the entire set of independent time spells. Models 1 and 2 test Hypothesis 1 by incorporating the firm-level R&D and advertising expenditures directly. Models 3 and 4 differ in that they use the variables measuring R&D and advertising competitive advantages to test Hypothesis 2.¹² Among those 503 observations, some observations had missing information for some of the variables and were removed. The actual number of observations used in the regression analysis are 465 for models 1 and 2 and 421 for models 3 and 4. Results (χ^2) are significant at $p < .001$.

Hypothesis 1 predicts that firms with intangible underutilized resources are more likely to enter a foreign market. Models 1 and 2 show that the higher the R&D intensity in Japanese firms, the more likely the firms are to initiate foreign entry. The advertising intensity, however, did not turn out to be significant.

The line of business variables—line of business size and competitive advantage—turned out to be strongly significant in all regressions, showing that the firms were entering the foreign market following a sequence from core to noncore businesses. The results also show that the firms were entering the foreign market following a sequence from investing first in a business with the strongest competitive advantages and then moving to the less competitive ones. Thus, findings support Hypothesis 2.¹³ It is interesting to see that the coefficients for advertising competitive advantage are significant in models 3 and 4 but that the simple firm-level advertising intensity variable was not significant in models 1 and 2. The result suggests that the mere existence of information-intensive assets is only a necessary condition for

¹² The R&D intensity and R&D competitive advantage (Japanese R&D – U.S. R&D intensity) variables could not be included in the same equation because of their linear structure. When I put the two variables together in a regression such as β_1 (Japanese R&D intensity) + β_2 (Japanese R&D intensity – U.S. R&D intensity), it becomes $(\beta_1 + \beta_2)$ (Japanese R&D intensity) – β_2 (U.S. R&D intensity). Thus, the estimated coefficients β_1 and β_2 do not correspond to the original variables of interest.

¹³ I alternatively tested the hypotheses with a sample that consisted of only the first entry event for each line of business (a nonrepeated single event hazard model). The results were consistent with the repeated hazard model.

TABLE 2
Results of Proportional Hazard Modeling of Entry Decisions*

Variables	Model 1	Model 2	Model 3	Model 4
Line of business characteristics				
Line of business size	0.25 (2.53)*	0.20 (2.15)*	0.24 (2.50)*	0.20 (2.15)*
R&D advantage			15.01 (3.51)***	17.45 (4.15)***
Advertising advantage			17.56 (1.87)†	18.05 (1.92)†
Firm characteristics				
R&D intensity	23.64 (5.81)***	24.07 (5.97)***		
Advertising intensity	11.92 (0.91)	13.35 (1.01)		
Accumulated entries	0.02 (3.71)***	0.01 (0.58)	0.02 (3.27)**	0.01 (0.21)
Export ratio	0.06 (0.12)	0.29 (0.58)	0.29 (0.59)	0.56 (1.12)
Horizontal business group	0.44 (1.82)†	0.48 (2.02)*	0.66 (2.63)**	0.65 (2.65)**
Vertical business group	0.36 (1.54)	0.42 (1.77)†	0.42 (1.73)†	0.45 (1.82)†
Industry characteristics				
Japanese concentration	0.02 (1.49)	0.01 (1.01)	0.03 (2.04)*	0.03 (1.87)†
U.S. concentration	-0.02 (-2.17)*	-0.02 (-1.53)	-0.04 (-2.94)**	-0.02 (-1.57)
U.S. shipment growth	0.28 (0.41)	0.18 (0.25)	2.23 (2.79)**	2.28 (2.82)**
Import penetration	0.01 (2.47)*	0.01 (1.90)†	0.03 (2.05)*	0.03 (3.95)***
Quotas	0.65 (2.79)**	0.28 (1.21)	0.53 (2.21)*	0.16 (0.68)
Macroeconomic effects				
Exchange rate		-0.01 (-6.51)***		-0.01 (-6.28)***
χ^2 for covariates	121.57***	169.08***	92.63***	135.77***
Number of observations	465	465	421	421

* Statistics in parentheses are t's.

† p < .10

* p < .05

** p < .01

*** p < .001

direct investment, which is only likely to occur when those assets yield a competitive advantage over local firms.

The accumulated total entry variable reflects accumulated experience in foreign entry. I hypothesized that firms were more likely to enter further if they had accumulated learning about foreign operations through their previous experience. The accumulated entry variable turned out to be strongly

significant in models 1 and 3, confirming my conjecture. The variable loses significance, however, when the exchange rate variable is added as a result of strong serial correlation between the appreciation of the yen and the accumulation of direct investment of the sample firms during the period 1976-89.¹⁴

The two business group membership variables were significant in all but one of the regression equations, although the coefficients for vertical business group membership are significant at only 10 percent. Firms associated with horizontal or vertical business groups were more likely to invest in the United States than independent firms, indicating that learning from other firms in the corporate network in Japan might strongly promote foreign entry. The effect of membership in a vertical keiretsu, however, might have been partly driven by firms following their customers. Even if firms in vertical keiretsu invest in the United States to continue supplying their buyers, the transfer of experience to the suppliers may be more important to ensure the reliable supply of parts from the suppliers' transplants. The export variable was not significant.

All the industry characteristics variables turned out to be significant and to have the predicted signs. Japanese eight-firm concentration has significantly positive coefficients, suggesting possible oligopolistic reactions (Flowers, 1976; Knickerbocker, 1973; Yu & Ito, 1989). In an effort to test the quadratic relationship suggested by Flowers, I squared the Japanese eight-firm concentration ratio.¹⁵ The ratio has positive, significant signs and the squared term has negative signs, implying that oligopolistic reaction is an inverted U-shaped relationship. The negative sign of the U.S. eight-firm concentration ratio reflects possible difficulty in penetrating the concentrated market. U.S. shipment growth shows that Japanese firms are more likely to invest in an industry with high demand growth. The U.S. import penetration variable shows that firms are more likely to enter an industry with relatively high import penetration. The quota variable indicates that export barriers partly encouraged Japanese investments. The strongly negative exchange rate variable shows that yen appreciation strongly prompted Japanese entries. These results confirm the conventional wisdom on foreign direct investment emphasizing industry structure and exchange rate effects.

DISCUSSION AND CONCLUSION

This study examined the effects of firms' building capability in operating overseas through the sequential foreign entry process. Taking an organ-

¹⁴ The accumulated entry variable and the exchange rate variable are strongly significant when one variable but not the other is included. The accumulated entry variable loses its significance only when the exchange rate variable is present.

¹⁵ Since the squared Japanese concentration variable had high multicollinearity ($r = .99$) with the squared term and tended to depress the significance levels of both the U.S. concentration ratio and advertising advantage variables, I do not report results with the squared term. The results are available upon request.

izational learning perspective on foreign entry allowed tracing the process of international expansion dynamically. A contribution of this study is its explicit presentation and testing of a theory of the foreign entry process using a resource and capability-based perspective. From this new perspective, I evaluated the importance of learning in foreign entry via analysis at the line-of-business level, which allows examination of the sequential process of foreign entry in terms of businesses' competitive advantages over local firms and their size. This study also found that learning may be transferred within Japanese corporate networks.

In summary, Japanese electronics firms appear to be learning from their own experience in foreign entry. To reduce the risk of failure, these firms are entering their core businesses and those in which they have stronger competitive advantages over local firms first. The learning from early entry enables firms to launch further entry into areas in which they have the next strongest competitive advantages. As learning accumulates, firms may overcome the disadvantages intrinsic to foreignness. Although primary learning takes place within firms through learning by doing, they may also learn from other firms through the transfer or diffusion of experience. This process is not automatic, however, and it may be enhanced by membership in a corporate network: in firms associated with either horizontal or vertical business groups were more likely to initiate entries than independent firms. By learning from their own sequential entry experience as well as from other firms in corporate networks, firms build capabilities in foreign entry.

The process of capability building in foreign entry corresponds well with the process of diversified entry. In earlier work (Chang, 1992), I studied entries into new businesses and found that firms first made small-sized entries in areas close to their resource bases and moved onto more distant fields on a bigger scale with learning from prior entries. This study shows that firms start exploring foreign entry with their larger businesses and with businesses in which they have stronger competitive advantages over locals. The logic of sequential entry is identical in diversification and international expansion: firms thus minimize the cost of failure and maximize learning.

These findings permit description of a consistent Japanese expansion strategy. Rather than make one-shot, full-scale acquisitions or greenfield investments, Japanese companies appear to pursue incremental, sequential entry, moving from initial to further investment in an orderly manner. This investment pattern can also be observed in Japanese companies' venture capital investment and acquisition strategies (Hurry, 1993; Hurry et al., 1992). This strategy can be seen as the exercise of a series of call options. Japanese companies may not have a blueprint for such an incremental strategy in advance. Rather, as Bowman and Hurry (1993) argued, this evolutionary strategy emerges with organizational resource commitments and unexpected opportunities and threats over a relatively long period of time. The implication is clear: applying this strategy, Japanese companies can use their resources most effectively, maximize the realized value of organizational learning, and best capture unexpected opportunities. Organizational capa-

bility building enables firms to recognize shadow options and fully exploit their value by exercising them at the right time.

The results of this study are also somewhat different from those of previous research based on industry-level data, which has often relied on a life cycle theory of foreign direct investment (Vernon, 1966). According to the theory, foreign direct investments usually take place in mature industries. Kogut and Chang (1991) showed, for instance, that Japanese investments into the United States are more frequent in industries characterized by slow R&D growth. Such findings, however, apply only to cross-industry analysis. In the present analysis, at the line-of-business level among firms in one broadly defined industry, electronics, I found that lines of business with stronger R&D or advertising advantages over local firms tend to invest earlier than other businesses. It is interesting to note that each theory is sensitive to the level of analysis that is being empirically researched.

This study has several limitations. I discussed knowledge and learning in my theoretical arguments but do not directly measure these constructs, inferring learning from firms' sequential entry behavior and from the effects of accumulated experience and business group membership. Measures of knowledge and learning need to be improved in future studies.

An extension of this study would be to examine the choice among different modes of foreign entry (acquisitions versus establishing new plants) from a capability-building perspective. It can be argued that acquisition will be preferred only after firms have accumulated enough entry experience. Caves and Mehra (1986) found that previous foreign experience is positively related to the probability of entering through acquisition. Hennart and Park (1993) measured experience as the number of years elapsed since a first entry but did not find any evidence that such experience favors any particular mode of entry. It would be interesting to study the effects of the market structure and competitiveness of each line of business on the mode of entry selected.

Another extension would be examination of whether the sequential expansion pattern of Japanese companies also characterizes Western companies. As was discussed earlier, the sequential investment pattern might be stronger for Japanese companies, whose cultural and institutional background favor an incremental and evolutionary approach. It would be very interesting to compare Japanese and Western companies in the same industries. Kagano and colleagues (1985) referred to American companies as strategic firms (favoring fast and big investments) and to Japanese companies as evolutionary firms. Hurry (1992: 89; 1993) described Japanese firms as "strategic options players with a long-term view" and American firms as "short-term project-oriented players." Thus, the sequential investment pattern may not hold for Western companies. In addition, it would be interesting to examine whether learning gained from investment in one country (here, the United States) can be applied to entry into other regions (for instance, Europe). Davidson (1980) concluded that firms in the initial stage of firm expansion exhibit a strong preference for near and similar cultures, but this

preference diminishes as they gain experience. It would be interesting to examine to what extent Japanese firms can apply learning from their entry experience in the United States to countries with different cultures.

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NEW TRENDS IN REWARDS ALLOCATION PREFERENCES: A SINO-U.S. COMPARISON

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This study explored situations in which current organizational goal priorities require rewards allocation logics that contradict traditional distributive norms and the natural characteristics of resources. Data from Chinese and U.S. business organizations showed that the Chinese employees were economically oriented and preferred to invoke differential rules (those that result in unequal distribution of rewards) for the allocation of both material and socioemotional rewards whereas their U.S. counterparts were humanistically oriented and preferred a performance rule for the allocation of material rewards but equality rules for socioemotional rewards. The results are discussed in the light of organizational goal priorities, cultural traditions, and other sociohistorical factors.

Issues of distributive justice become especially salient at times of reform and change. Organizational rewards and compensation policies may be revised or redesigned to embody and signify new values and to align behaviors and practices with new missions and goals. Whether and how justice beliefs and preferences change in response to new societal and organizational conditions is important both to organizational researchers who locate justice beliefs, preferences, and motives in sociohistorical contexts (Sampson, 1981) and to practitioners who are interested in managing the contextual contingencies of justice in multinational organizations operating in different political systems, at different levels of economic development, and among different cultural traditions.

Organizational reforms in the United States and the People's Republic of China offer ideal opportunities for exploring these matters. The two nations are known to have distinct cultural traditions of individualism and collectivism (Earley, 1989, 1993; Meindl, Hunt, & Lee, 1989), which have been linked directly to distributive norms (e.g., Bond, Leung, & Wan, 1982; Hui, Triandis, & Yee, 1991; Leung, 1988); but reward systems are changing in both

I would like to thank K. C. Yu, Wei He, and other colleagues for their assistance with data collection in China. Thanks also to Fariborz Damangpour, Richard Hoffman, and James Meindl for commenting on earlier versions of this article. Special thanks to Raymond Hunt, for his collegial help beyond the call of duty, and two anonymous reviewers, for their very thoughtful and constructive comments. This research was supported in part by a research grant from the Research Resources Committee of the Graduate School of Management at Rutgers University.

countries. Innovative U.S. companies are revamping their individual-based reward systems to support team-based reorganization and foster cooperation (Kanter, 1989), and pioneering Chinese enterprises have been reforming their egalitarian reward systems to establish individual responsibility and encourage initiative and competition (Jackson, 1992).

This study explored preferences for allocating various organizational rewards and resources in the United States and the People's Republic of China. It sought to identify possible trends in allocation preferences in the two countries and the effects of cultural norms, organizational goal priorities, and reward types on allocation preferences.

AN INTEGRATED MODEL OF ALLOCATION PREFERENCES

Distributive justice researchers have identified a variety of factors that affect decision making about reward allocation. These include individual characteristics (e.g., Major & Deaux, 1982), cultural norms (e.g., Bond et al., & Wan, 1982; Leung & Bond, 1982), resources (e.g., Tornblom & Foa, 1983), and situational demands such as allocation goals (e.g., Leventhal, 1976; Mikula, 1980). Mostly, organizational justice research has examined these determinants separately. Managers, however, must often consider multiple conflicting factors when allocating organizational rewards. The present study therefore proposed an integrative model that incorporates three well-researched determinants of allocation decisions: cultural norms, organizational goals, and resource types. Before presenting this model, I first define allocation preferences and briefly review research on these determinants.

Allocation Preferences

Allocation preferences are resource allocators' attitudes toward the features of an allocation situation (Leventhal, Karuza, & Fry, 1980). The rules and procedures by which resources are allocated are two major features of an allocation situation. Preferences affect allocation decisions by disposing allocators to favor certain rules and procedures over others. This study dealt only with preferences regarding allocation rules.

Allocation rules. Among a great variety of possible allocation rules (Reis, 1984; Rescher, 1966), the following three have been considered most important (e.g., Deutsch, 1973, 1985; Leventhal, 1976): (1) the equity rule, which mandates allocation proportional to each organization member's contribution or performance, (2) the equality rule, which mandates equal allocation to all members regardless of contribution, and (3) the need rule, which mandates allocation according to members' needs. From these basic rules, Martin and Harder (1988) derived seven organization-based allocation rules: performance, rank, seniority, job-related needs, group equality, personal needs, and individual equality. These rules are believed to vary on the dimension of equality. Rules that result in unequal distribution of rewards are differential rules, whereas those that result in equal or nearly equal distribution are equalitarian rules. The differential-equalitarian distinction is sim-

ilar to Reis's (1984) empirically established dimension of status orientation, which ranges from status assertion to status neutralization. Status assertion "creates, enhances, or perpetuates distances between people in terms of their standing on a status hierarchy"; status neutralization "minimizes existing differences by establishing caretaking bonds or stressing the basic equality of all people" (Reis, 1984: 48).

Determinants of Allocation Preferences

The cultural model. This model focuses on effects of broad normative beliefs and values that are "built into the educational, family, political, and economic systems of a society or subculture" (Leventhal et al., 1980: 175). Cultural norms influence allocation preferences by limiting the number of alternatives or by orienting allocators to favor some rules over others.

Cross-cultural research has found that members of collectivistic societies, such as ethnic Chinese communities, prefer equalitarian allocations, whereas individualistic nationals, such as U.S. Americans, generally prefer differential allocations that match proportional contributions (e.g., Bond et al., 1982; Hui et al., 1991; Leung & Bond, 1984). Key to the distinction between individualism and collectivism is concern for self-interest as opposed to concern for a group (Triandis, 1989). Collectivists prefer equalitarian allocations presumably because they are very concerned with creating and maintaining interpersonal harmony. Individualists prefer differential allocations because they are concerned with task achievement (Leung, 1988; Triandis, 1989).

The goal model. The cultural model emphasizes the broad and enduring effect of cultural norms and values; the goal model directs attention to the more immediate situational demands of a social setting. Major proponents of the goal model posit allocation goals as the key determinant of allocation preferences. Allocation goals are linked with the collective goals of a social system (Leventhal et al., 1980; Mikula, 1980). To achieve the superordinate goal of survival, organizations must achieve derivative goals of productivity, social harmony, and individual development and welfare. However, the relative importance of various goals can vary from one organization to another and over time within a single organization as demands created by environments and members' needs change (Leventhal et al., 1980).

Typically, researchers have tested goal priority models in within-culture contexts, where differential rules are preferred when economic productivity is the priority but equalitarian rules are preferred when maintaining social harmony is the priority (Deutsch, 1985; Leventhal et al., 1980). A rationale for these relations is the instrumental utility of allocation rules (Wiggins, 1945; Yamagishi, 1984). Different rules have different consequences, and groups and individuals learn to adopt rules that are instrumental to the attainment of their goals.

The resource model. This model has a theoretical basis in resource theory (Foa & Foa, 1974, 1980), according to which resources have distinct properties that signify and characterize types of social relationships, such as

economic and noneconomic exchanges. Different resources satisfy different needs of the exchanging parties. Hence, not all resources equally fit given justice rules: differential rules are more appropriate for allocating material resources and equalitarian rules are more appropriate for socioemotional resources.

Integrating the resource classification made by justice researchers (Foa & Foa, 1980; Tallman & Ihinger-Tallman, 1979) and the rewards classification made by motivation researchers (e.g., Herzberg, 1966; Likert, 1967; McGregor, 1960), Martin and Harder (1988) proposed a material-socioemotional distinction for grouping organizational rewards. Material rewards are typically involved in impersonal exchanges and socioemotional rewards are typically involved in interpersonal particularistic exchanges that enhance the participants' psychological well-being.

An Integrated Model of Allocation Preferences

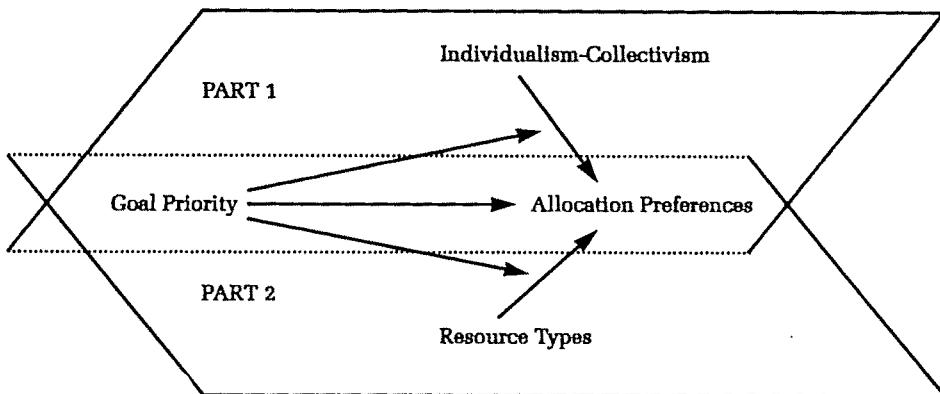
The literature shows consistent evidence that collectivism, harmony goals, and socioemotional resources are linked to equalitarian preferences and that individualism, economic goals, and material resources are linked to differential preferences. Furthermore, an assumption prevails about the relations among the three independent variables: individualists are economically oriented and value material resources more than socioemotional ones whereas collectivists are relationally oriented and value socioemotional resources more than material ones.

This assumption fails to address the fact that nations and organizations have different goal priorities at different times. Certain historical periods or organizational circumstances may prompt collectivists to emphasize economic goals of productivity and individualists to stress social and humanistic goals. How, then, should resources be allocated? What allocation rules will be preferred by collectivists pursuing economic goals and individualists pursuing social and humanistic goals?

It is argued here that organization members will compromise cultural tradition and resource characteristics in the service of goal accomplishment. This goal primacy argument has three theoretical bases. One is the survival importance of the achievement of system goals (Leventhal et al., 1980; Simon, 1964) for adapting to the environment and resisting disintegration. A second basis is the adaptability of culture and cultural norms. Culture develops to cope with external adaptation and internal integration (Schein, 1985) and has to be adequately adaptive to be viable (Lewin, 1951; Ross & Nisbett, 1991). The third rationale for goal primacy is that goal-directed rationality is implicit in the cultural and the resource models. Collectivists and individualists prefer different rules largely because they have different goals, such as harmony and productivity (Leung, 1988). Material and socioemotional resources fit different allocation rules because different resources are effective for the satisfaction of different needs and purposes (Foa & Foa, 1980).

Figure 1 describes a model of the main and interactive effects of goal

FIGURE 1
A Model of Allocation Preferences



priority on allocation preferences. The model has two parts. Both contain my central proposition, that allocation preferences will match current prevailing goal priorities, but part 1 contains the idea that when goal priorities conflict with cultural tradition, rewards allocators will attempt to modify cultural tradition in order to facilitate and justify goal-oriented allocation; whereas in part 2, the effects of resource characteristics on allocation preferences depend on goal priority.

The integrated model guided two studies, and this article reports the second of those. The first, which investigated how Chinese business employees reconciled cultural tradition to open-market enterprise reforms, tested part 1 of the model and found that the Chinese expressed stronger support for differential than for equalitarian rewards allocation (Chen, Meindl, & Hunt, 1994). It was also found that the horizontal aspect of collectivism, which holds interpersonal harmony as a value, was negatively related to the support for differential allocation; whereas the vertical aspect of collectivism, which values subordination of self to the collectivity, was positively related to the support. These findings suggest that people can selectively interpret cultural values to facilitate and justify enterprise reforms. This article reports the testing of part 2 of the model by comparing Chinese and U.S. employees' goal orientation and allocation preferences for various types of organizational rewards.

A SINO-U.S. COMPARISON

Two contrasting features of U.S. and Chinese businesses are relevant for this study. First, they represent distinct national cultures. Second, they have been experiencing goal priority changes in different directions.

Individualism-Collectivism and Norms of Equity and Equality

Cross-cultural studies (Bond, 1987; Hofstede, 1980; Hofstede & Bond, 1988) have consistently shown that U.S. nationals and Chinese people living

outside of mainland China are at opposite extremes on the dimension of individualism-collectivism. And distributive justice research has found consistent evidence that, when rewards are allocated among group members, individualistic Americans prefer equitable solutions whereas collectivistic Chinese prefer equality solutions (e.g., Bond et al., 1982; Leung & Bond, 1982).

Chinese equalitarian preferences are said to have roots in traditional Confucianism (Bond & Kwang, 1986). Paradoxically, this egalitarian tradition concerning wealth distribution contrasts with another Confucian tenet, hierarchical social relations (Eberhard, 1971). The two go hand in hand, however, in the Confucian wisdom of governance. Economic equality ensures social harmony and maintenance of authority whereas economic inequality causes disharmony and rebellion: in a Confucian aphorism, there should be "no worry about scarcity but unevenness; no worry about poverty but instability" (Lunyu, 1991: 266).

It is evident from previous research that ethnic Chinese living abroad have maintained these Confucian values, but the situation in mainland China is not clear. Scholars have noted a paradoxical relation between Maoism and traditional Confucianism. Tu, for example, wrote that Maoist "iconoclasm is layered with numerous sediments of nativistic pathos" (1991: 24). Scholars have remarked that attacks on and destruction of Confucian values by the Maoist revolution coexisted with collusion with those values. Maoism reinforces egalitarianism partly because of its compatibility with socialist ideology (Fairbank, 1987; Kornai, 1985; Shenkar & Ronen, 1987). For example, the Maoist preoccupation with eliminating the so-called three gaps in China (gaps between the city and the country, the worker and the peasant, and the mental and the physical) is resonant of the Confucian concern with unevenness in wealth distribution.

Organizational Goal Priorities

Expansion of goal priorities in U.S. companies. U.S. businesses have been viewed as rational instruments of production and profit (Scott, W. G., 1988a; Scott, R. W., 1992). Humanistic critics, however, have argued that U.S. organizations are not merely rational means of profit and productivity but also natural systems with social and humanistic goals (e.g., Keeley, 1984; Scott, 1988b). These goals are not merely secondary to the primary goals of profit and efficiency but are legitimate in their own right (Goodman & Pennings, 1977; Keeley, 1984; Scott, 1988a). Whether instrumental or ultimate, humanistic concerns have gained legitimacy among U.S. business organizations (Scott, 1992). Hence, goal priority changes in U.S. organizations can be read as an increase in the weight granted to social and humanistic goals.

Goal priority shift in Chinese enterprises. Interestingly, there has been a similar priority shift among Chinese enterprises, but in a different direction. Before the economic reforms occurring in 1978, Chinese enterprises acted as political, educational, and welfare institutions. Their objectives were more sociopolitical and ideological than economic (Jackson, 1992;

Walder, 1986). Profit was taboo and concern for production was criticized as capitalistic. Since 1978, reforms have sought to increase the economic performance of enterprises (see Jackson [1992] for a detailed review). Enterprises were given greater discretion in production and sales; a management responsibility system was introduced; financial reforms encouraged firms to seek profits, and profit targets were set as performance criteria; taxation and a bankruptcy law became effective in 1988. Chinese bankruptcies are still statistically rare, but they have enormous psychological effects on managers and workers alike. Reduced protection by the state and increasingly competitive open markets have caused a drastic change from sociopolitical to economic goals. Enterprise management reform has moved China a long way toward giving labor productivity priority over social and ideological considerations (Jackson, 1992: 131).

HYPOTHESES

These observations on goal priority changes in U.S. and Chinese business organizations suggest

Hypothesis 1: In comparison with their U.S. American counterparts, business employees in the People's Republic of China will place higher priority on economic organizational goals and lower priority on humanistic organizational goals.

Pressed by the inconsistent demands of current goal priorities and traditional cultural norms, rewards allocators may either adhere to traditional distributive norms or select rules according to their instrumentality. The goal primacy argument proposed here implies that rewards allocators will prefer rules compatible with current goal priorities. Hence,

Hypothesis 2: Business employees in the People's Republic of China will prefer differential rules more strongly than their U.S. counterparts, whereas U.S. business employees will prefer equalitarian rules more strongly than their Chinese counterparts.

When economic development is the dominant goal, people will try to use all types of resources to facilitate economic achievement. When there are social and humanistic concerns in addition to economic ones, however, they will use different resources to satisfy different concerns.

Hypothesis 3: Business employees in the People's Republic of China will prefer differential rules for allocating all types of rewards.

Hypothesis 4: U.S. business employees will prefer different rules for allocating different types of rewards. Specifically, they will prefer differential rules for allocating material rewards but equalitarian rules for socioemotional rewards.

METHODS

Overview

A major difficulty in cross-national and cultural research is comparability (Berry, 1980). To compare supposedly different cultural groups, some dimensional identity must exist. In this study, I tried to assure conceptual equivalence in the stimuli used by "decentering" in translations of questionnaires (Werner & Campbell, 1970) and to assure metric equivalence by using common factor structures in the data. I sought sample equivalence by soliciting respondents from all job levels of primarily manufacturing companies in both countries.

Role-playing was the means used to elicit allocation preferences in this study. Respondents played the role of a company president reforming organizational reward policies. In previous cross-cultural justice research by psychologists, respondents typically played the role of a worker who divides rewards between self and a partner (Bond et al., 1982; Leung & Bond, 1984; Hui et al., 1991). These two roles have important differences. First, the worker is both an allocator and a recipient whereas the president is primarily a third-party allocator. Second, power status is equal between the worker and his or her partner but unequal between the president and the company employees. Third, the interpersonal relation is salient in the former case, whereas in the latter case, obligation to individuals may yield to collective obligation. Finally, a worker-allocator's goal is implicit and may be very personal whereas a president's goal can be quite constrained by organizational goals.

Sample

Participating companies. Two major criteria were used to select companies for the study. One was industry type. The other was company size, used to enable gathering a sample of employees balanced for gender and job level. In the United States, two companies participated: a medium-sized machine tool company and a large industrial gas company.

In China, three large state-owned enterprises participated in the study: a steel manufacturer, a petroleum company, and a transportation company. Each had been undergoing reform since early 1980s. Also surveyed were 60 or so participants of a university training program, who were from companies that manufactured mechanical equipment.

Respondents. Table 1 describes the respondents by nation, job level, and gender. The U.S. respondents were about seven years older ($t_{450} = 2.59$, $p < .01$) and had about three and a half years more education ($t_{457} = 12.76$, $p < .001$) than the Chinese respondents, who were, on the average, 34 years old with a high school education. The two groups were not significantly different in job level or gender composition.

Data Collection Procedures

All data were collected in 1991. In the United States, questionnaires were distributed through internal company mail systems and returned anon-

TABLE 1
Breakdown of Sample^a

Nation	Top Manager	Middle Manager	Professional	Supervisor	Worker
China	29:6	33:6	15:1	41:20	60:44
United States	9:1	29:7	10:2	38:19	32:36

^a Ratios show numbers of men to women.

ymously in sealed envelopes to the author via the company's human resource department. The procedure in China was slightly different. The survey was administered by a Chinese professor who gave instructions and collected the completed questionnaires at each site. The professor introduced the survey as a multiple company study by management professors from a prestigious Chinese university and requested serious and candid participation because the purpose of the study was to "solicit opinions from workers, professionals, and managers regarding the allocation of various organizational rewards so as to provide bases for making enterprise reward policies." Finally, it was stressed that individual responses would be completely confidential and that the companies had no access to them.

These steps were taken to counter any desire of the respondents to present a positive Chinese image to foreigners (Adler, Campbell, & Laurent, 1989) and to encourage candid responses. As the project coincided with ongoing reforms and discussion of rewards and compensation in these companies, respondents received it enthusiastically. Many stayed behind and engaged in discussions about reforming the company's system of rewards and compensation.

Instruments

The in-basket exercise. This exercise was an adaptation of Martin and Harder's (1988) procedure. It introduced a manufacturing company of about 1,000 employees that sold medical instruments worldwide. Respondents played the role of a newly appointed president who had initiated organizational changes. The current focus was on reward allocation policies. On this particular day, the president was to deal with seven memos from other top managers. Each memo discussed the allocation of one particular reward and requested the president to evaluate the appropriateness of seven allocation rules, which served as criteria for allocating a given reward, on a nine-point scale (1 = inappropriate, 5 = somewhat appropriate, and 9 = most appropriate). The president was reminded that "you have direct influence on the establishment of criteria for future distribution decisions, in whatever way you think will be best for your employees and your firm."

Allocation rules. Seven rules taken from Martin and Harder (1988) were broken into two a priori types (Reis, 1984): differential rules were performance, rank (job positions), seniority (tenure), and job-related needs; equal-

itarian rules were group equality, personal needs, and individual equality. Factor analysis of the rule preferences across rewards showed that all but the personal needs rule conformed to the conceptual distinction. Personal needs clustered with the two equality rules in the Chinese data but with the differential rules in the U.S. data.¹ I therefore excluded data based on the personal needs rule from the comparative analyses.

Reward types. Seven rewards relevant to both the U.S. and the Chinese respondents were used: a pay raise, a bonus, use of company cars, paid vacation, display of one's photograph at the workplace, managerial friendliness, and attending a party with the company president (U.S.A.) or a party given by the city industrial bureau (China).

The seven rewards can be grouped into three types: pay and bonus are material rewards; managerial friendliness, a party, and a photo display are socioemotional rewards; and a company car and paid vacation are mixed rewards conveying both material benefits and honor and prestige. These rewards were rated by management students, 20 from a Chinese university and 39 from a U.S. university, on a seven-point scale (1 = the most material, 7 = the most socioemotional). As Table 2 shows, there was high agreement between the Chinese and U.S. students on ratings of material rewards. The Chinese viewed party attendance as a more socioemotional reward than did the Americans, but both groups put the reward in the socioemotional category. For the mixed rewards, car use and paid vacation formed a distinct category for the Chinese but not for the U.S. raters, who treated them as basically similar to pay and bonus. I excluded data based on the mixed rewards from subsequent analyses of reward types.²

Allocation preferences. I measured allocation preferences using the ratings of the allocation rules for certain rewards. The overall differential preference and the overall equalitarian preference were respectively the average ratings of the differential and the equalitarian rules across seven rewards. I constructed a general equality index by subtracting the differential preference from the overall equalitarian preference.

Goal priority. Respondents filled out a questionnaire assessing goal priorities after performing the in-basket exercise. The list of 12 goals in Table 3 is by no means exhaustive, nor does it imply that organizational goals are unidimensional. The list was designed to correspond with the productivity-solidarity dichotomy of system goals justice researchers have proposed (e.g., Deutsch, 1985). Half the goals were economic and the other half, humanistic. Respondents rated the goals, which were arranged into three groups, using a procedure developed by Inglehart (1977). Within each group, respondents

¹ The difference may suggest that the U.S. group viewed the rule as differential because it involves differential treatment whereas the Chinese viewed it as equalitarian because it results in more equal status.

² Interested readers can contact the author for data analyses including data based on the mixed rewards and the personal needs rule.

TABLE 2
Mean Ratings of Material-Socioemotional Value

Rewards	United States	China	t
Material			
Pay	2.54	3.00	-1.32
Bonus	3.31	2.70	1.72
Mixed			
Car	2.90	4.75	-4.66***
Vacation	3.38	4.45	-2.18*
Socioemotional			
Party	4.74	6.10	-3.03**
Photo display	5.67	6.15	-0.97
Friendliness	6.08	6.10	-0.06

* p < .05

** p < .01

*** p < .001

marked the most important and the second most important. They then chose the most important, the second most important, and the least important from the total set of goals.

Goal orientation indexes. Following Inglehart's procedure (1977), each respondent generated an index of goal orientation; values ranged from -3, the economic extreme, to +6, the humanistic extreme. I conducted a principal components analysis imposing one factor on the procedure. The one-factor solution (Table 3) confirmed the bipolarity of economic and human-

TABLE 3
Factor Analysis Results

Goals	United States	China
Economic		
Quality	-.42	-.59
Productivity	-.61	-.19
Profit	-.56	-.30
Sales	-.38	-.42
Efficiency	-.39	.12
Competitiveness	-.47	-.55
Humanistic		
Management-employee relations	.58	.51
Employee satisfaction	.44	.41
Decision-making participation	.35	.59
Quality of work life	.56	.05
Employee development and growth	.58	.31
Warm and friendly atmosphere	.52	.44
Percentage of variance explained	25	17.3

istic goals and was consistent with Inglehart's (1977) findings about U.S. societal goals.³

Translation

Back-translation (Brislin, 1970; Werner & Campbell, 1970) was used to create the Chinese questionnaire. A bilingual person who was familiar with the distributive justice literature translated the English scales into Chinese. This version was back-translated by two Chinese who taught English at Chinese universities. A monolingual individual then checked the back-translated English against the original English. All parties consulted about doubts or errors until problems were solved.

ANALYSIS AND RESULTS

Table 4 presents descriptive statistics. The results of a group *t*-test of the goal orientation index showed that the U.S. respondents had a stronger humanistic goal orientation than the Chinese ($t_{477} = 12.72, p < .01$), which supported Hypothesis 1. The results of *t*-tests of allocation preferences supported Hypothesis 2. Across reward types, the Chinese expressed stronger differential preferences than the Americans ($t_{471} = 17.55, p < .001$), but the Americans expressed stronger equalitarian preferences than the Chinese ($t_{475} = 16.62, p < .001$). This pattern also held within each nation in absolute terms: the Chinese preferred the differential rules over the equalitarian rules ($t_{271} = 27, p < .001$; means = 5.92 and 3.52), and the Americans preferred the equalitarian rules to the differential ones ($t_{198} = 11.70, p < .001$; means = 5.92 and 4.15).

The preference for individual rules across rewards (Table 5) revealed some interesting within- and between-groups results. The Chinese rated all differential rules as more important than the equalitarian rules. Allocation rules based on performance and job-related needs were most strongly supported; individual and group equality bases were least supported; and rank and seniority had moderate support. The Americans rated performance as the most important, but their ratings of the importance of individual and group equality came quite close to the performance rule's ratings. They viewed all other nonperformance rules as by and large inappropriate bases for allocating the focal rewards. Both the Chinese and the Americans ranked performance at the top. The largest difference occurred on both the absolute

³ The ipsative coding procedure used generates nonindependent data (Inglehart, 1977: 43), with the rank of one goal item determining, to some extent, the ranks of other goal items. This nonindependence has the effect of spreading the items over several dimensions. Nevertheless, I expected that the economic goals would cluster on one end and the humanistic goals on the other end of whatever the specific factor was. Principal components analysis revealed five to six factors, each generally containing both economic and humanistic items with opposite signs. The one-factor solution was therefore a summary of an overall dimension that polarized the two types of goal priorities.

TABLE 4
Descriptive Statistics

Variables	United States			China		
	Means	s.d.	N	Means	s.d.	N
General equality index	1.98	2.09	199	-2.38	1.45	272
Overall differential preference	4.16	1.20	201	5.92	0.98	272
Overall equalitarian preference	5.90	1.71	201	3.54	1.40	276
Differential preference for material rewards	4.18	1.32	203	6.10	1.09	274
Differential preference for socioemotional rewards	4.14	1.34	202	5.79	1.10	274
Equalitarian preference for material rewards	4.84	2.27	204	3.48	1.68	277
Equalitarian preference for socioemotional rewards	6.96	1.69	201	3.60	1.62	276
Goal orientation index	0.63	2.32	205	0.11	1.90	274

TABLE 5
Importance Ratings of Individual Rules Across Reward Types

Measures	Differential Rules				Equalitarian Rules	
	Performance	Rank	Seniority	Job Need	Group Equality	Individual Equality
United States						
Rating	6.85	2.84	3.71	3.25	6.06	6.17
Rank	1	6	4	5	3	2
China						
Rating	7.91	4.56	4.85	6.36	3.74	3.36
Rank	1	4	3	2	5	6
Difference	-1.06	-1.72	-1.14	-3.11	2.32	2.81

ratings and the ranking of equalitarian rules and nonperformance differential rules: the Americans preferred equality to nonperformance differentiation, but the Chinese did just the opposite.

To test Hypotheses 3 and 4, I conducted multivariate analyses on allocation preferences, using nation as a between-subjects factor and reward types and allocation rules as within-subjects repeated measures. A test using a two (nations) by seven (rules) by seven (rewards) design showed that in addition to significant main effects for nation, rules, and reward types, there were significant interactive effects (Table 6). I then performed the same tests on the two (nations) by two (rule types) by two (reward types) design. The results confirmed those of the initial test (Table 6). As Figure 2 shows, the Chinese expressed a dominant differential preference for both material and socioemotional rewards whereas the U.S. equalitarian preference was stronger for socioemotional rewards than for material rewards. These results give strong support to Hypothesis 3 but only partial support for Hypothesis 4. The U.S. respondents did prefer equalitarian to differential rules for allocating

TABLE 6
Results of Repeated Measures Analysis of Variance

Effects	Two × Seven × Seven Design		Two × Two × Two Design	
	F	df	F	df
Nation	21.71***	1, 466	10.72***	1, 469
Rules	590.44***	6, 461	15.85***	1, 469
Nation × rules	171.92***	6, 461	635.01***	1, 469
Rewards	45.98***	6, 461	102.53***	1, 469
Nation × rewards	33.68***	6, 461	143.18***	1, 469
Rules × rewards	65.00***	36, 431	140.87***	1, 469
Nation × rules × rewards	20.72***	36, 431	61.80***	1, 469

*** $p < .001$

socioemotional rewards but did not show a stronger preference for differential rules when material rewards were allocated.

The lack of support for the link between a preference for differential rules and material rewards in the U.S. data is probably due to the Americans' low ratings of nonperformance differential rules. To explore this possibility,

FIGURE 2
Effects of Nation, Rules, and Rewards

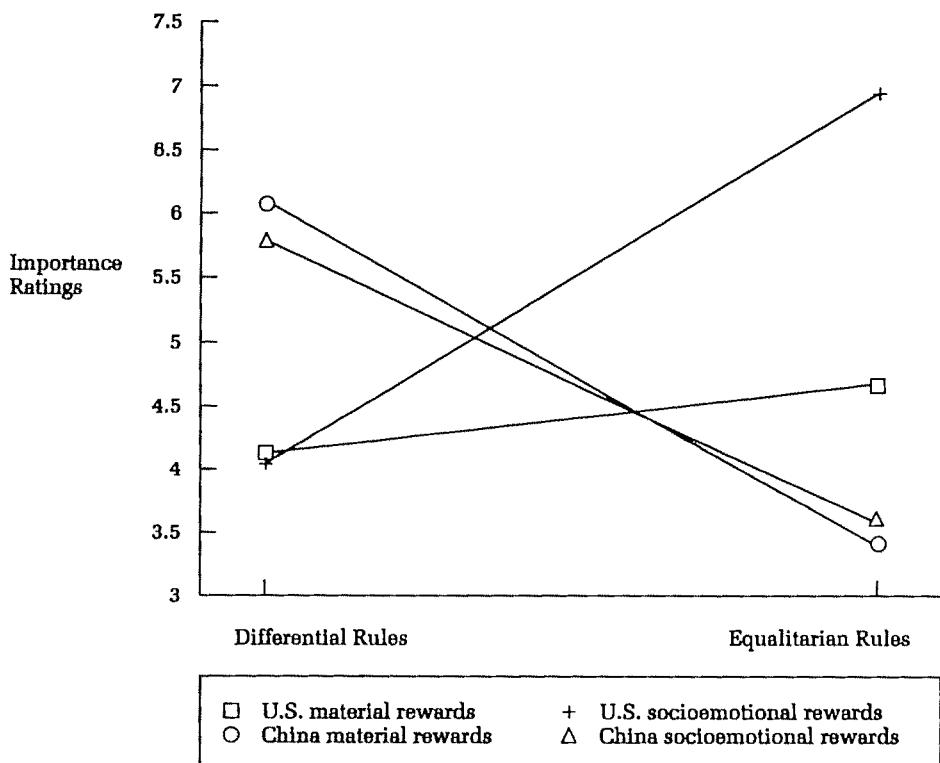
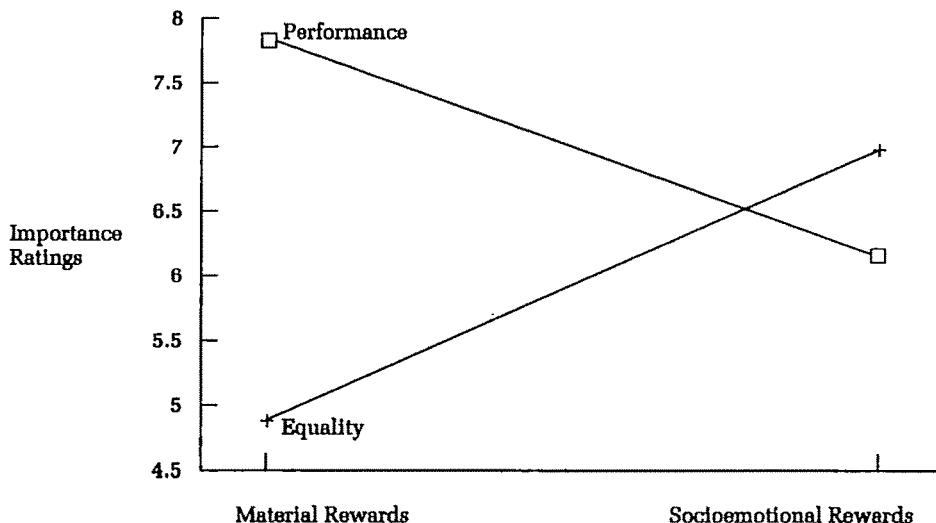


FIGURE 3
Effects of Rules and Rewards, U.S. Data



I compared preferences for rules of performance and individual equality. Results indicated that although Hypothesis 4 did not apply to other differential rules, it did apply to the performance rule (see Figure 3).

A major theoretical rationale underlying Hypotheses 2, 3, and 4 is that an organization's dominant goals influence its members' allocation preferences. Although previous research has strongly established the link between organizational goals and allocation preferences and the comparative results of this study offered supporting evidence, I directly tested such a link on the two summary indexes of goal orientation and general equality. Combining both countries' data, I regressed the general equality index on the goal orientation index, controlling for the individual background variables of age, gender, seniority, education, and job level. Goal orientation emerged as a significant predictor ($\beta = .14$, $t = 3.18$, $p = .001$) of the index: the more humanistic an individual's values, the stronger the preference for equalitarian over differential solutions. All the background variables but gender were also significant predictors of the general equality index. However, when dummy variables for company were added to the equation, only job level and goal orientation ($\beta = .08$, $t = 2.53$, $p = .01$) remained significant.⁴ There were no significant interactions between goal orientation and the dummy variables for company. In summary, the regression results provided some direct evidence in support of the effect of goal priority on allocation preferences.

* For the examination of the effects of goal orientation, controlling for company dummies was more accurate than controlling for nation. When both company and nation were put in the equation, nation could not enter because it had reached the tolerance limit, which indicated that it accounted for very little variance beyond the company dummies' contribution.

DISCUSSION

This study indicated that the Chinese people studied put emphasis on economic organizational goals whereas the Americans put emphasis on humanistic ones. The Chinese expressed consistent support for the differential allocation of both material and socioemotional rewards, and the Americans supported the performance rule for material rewards but preferred equality rules for socioemotional rewards.

These patterns by and large support the integrated allocation model in which I posited the primacy of organizational goal priorities. Preoccupied with productivity and efficiency, the Chinese appealed to a differential logic to legitimize reform in rewards allocation. In the U.S. companies, the legitimacy of humanistic goals provided a basis for equalitarian allocations. Although the performance rule was still dominant, differential rewards allocation was limited by the low support of the nonperformance differential rules and by a strong equalitarian preference for socioemotional rewards.

Previous cross-national studies have generally appealed to the normative status of allocation rules. This study, however, found evidence for the instrumental function of goal attainment. Instrumentality does not necessarily rule out the normative function of allocation rules, but points to the possibility of change. Both external and internal pressures give rise to new priorities, which serve as a catalyst for changing traditional norms and practices. Although it may be premature to conclude that new norms of rewards allocation have been formed in Chinese and American organizations, the present study offers a snapshot of an apparently changing process.

To what extent do the new goals reflect changes in cultural values? The goal expansion of U.S. companies may have organic roots in societal values. Inglehart's (1977, 1990) longitudinal study showed that for decades U.S. publics have been shifting emphasis from economic goals of material well-being toward humanistic goals of participation and self-actualization. The Chinese economic orientation may reflect environmental pressures and institutional practices more than cultural change. The priority shift was drastic and mandated by a reformist government in a frame of complex personal goals and values reflecting the influences of traditional Confucian values, Maoist ideology, and Dengist economic reform (Shenkar & Ronen, 1987).

Organizational goal priorities provide a rationale for general trends in allocation preferences, but other social, political, and cultural factors have also contributed to what has been happening. The Americans may have used different rules for different rewards partly because they have a tradition of accepting economic inequality along with political and social equality (Hochschild, 1981). On the Chinese side, the rejection of equality rules is partly a backlash against the extremely egalitarian practices of Mao's Cultural Revolution; a differential preference for socioemotional rewards is compatible with the Confucian value of social hierarchy, and a high rating of the job needs rule reflects Mao's insistence that work-related needs should be the only basis for communist cadre's privileges. Finally, the fact that the

Chinese rated rank and seniority higher than did the Americans can be attributed to cultural differences in power distance and social hierarchy.

Previous Sino-U.S. justice research by psychologists suggests that collectivists depart from the equality norm only when they are dividing rewards between themselves and an out-group member. In such a context, "the concern of the collectivist is oriented less toward enhancing harmony and more toward fairness" (Leung & Bond, 1984: 802). The present study showed that even in an in-group allocation setting, when concerns other than harmony are dominant, collectivists are willing to deviate from egalitarianism. In-group differential allocation is not inconsistent with collectivism. What counts is whether such differentiation is or is believed to be beneficial to the collective. If a Chinese supports differential rewards allocation because he or she believes it to contribute to the survival and health of the in-group as a whole, is that not collectivistic?

One may wonder, however, whether the president of a large company (the role respondents assumed) might not treat employees unknown to him or her personally as out-group members. The Chinese differential preference could then be attributed to out-group conditions. Arguments against this interpretation, however, are that, first, in-group identity is not limited to an actual group or to small group (Tajfel, 1981; Triandis, 1989). If a nation or even a race can be an individual's in-group, so can an organization. Second, Chinese companies (*danwei*) are, despite their large size, like in-groups to employees in much the same way that some Japanese companies are (Ouchi, 1981): they induce organizational identity and commitment by "total inclusion" of the employee (Ouchi, 1981; Walder, 1986). Third, a president's high status and distance from employees does not necessarily impose a psychological change from an in-group to an out-group relationship. Both the Confucian paternalistic tradition and the Maoist concept of cadre would morally and ideologically obligate the president to treat employees as members of his or her family. Finally, in two Chinese studies, Meindl, Hunt, and Yu (1995) manipulated goal contexts for respondents who played the role of a supervisor allocating rewards to four subordinates and found that even in very small groups with just a little status difference, the Chinese endorsed differentiation more than equality when the goal was productivity.

The viability of an in-group explanation of the findings reported here might, however, be better addressed through a deliberate in-group-out-group manipulation. In any case, the effects of the relationship between allocator and recipient is an important area for justice research. Hui and colleagues (1991), for example, implied that the collectivists' in-group egalitarian preference is limited to those of equal status and power. Future research should explore the main and interactive effects of group membership, status differences, and goal orientations through systematic manipulation.

This study has some other limitations that should be noted. First, it assessed change by using cross-sectional comparative data and previous accounts of American and Chinese companies. Such assessment should be further verified by replications. Second, although the role played in this

study seemed to be sufficiently familiar and involving (Greenberg & Eskew, 1993) to reveal patterns of beliefs and attitudes, role-playing does not capture the realism of on-going relations. For example, Sino-U.S. attitudinal differences about a given rule do not necessarily translate into behavioral differences of the same magnitudes. Finally, as the surveyed companies were from only two regions of two vast countries, care should be taken in drawing conclusions on national differences.

Nevertheless, the findings may have some practical implications. First, the study brought encouraging news for reform-oriented American and Chinese managers. The Chinese differential preferences shown here are consistent with efforts to encourage individual responsibility and to link rewards to performance, and the strong American preference for equality goes well with the recent emphasis on team-based reorganization in U.S. businesses. Second, the role of goal priorities needs to be understood. Those managing organizational change need to define, identify, and communicate new priorities to organization members to gain legitimacy and support for organizational reform. Finally, given U.S. employees' equalitarian preferences for socioemotional rewards, U.S. managers, especially those managing a diverse work force, should be alerted to the justice implications of social interactions (Greenberg & Ornstein, 1983).

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RESEARCH NOTE

© Academy of Management Journal
1995, Vol. 38, No. 2, 429-452.

ROLE CONFLICT, AMBIGUITY, AND OVERLOAD: A 21-NATION STUDY

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The extent of role conflict, role ambiguity, and role overload reported by middle managers from 21 nations was related to national scores on power distance, individualism, uncertainty avoidance, and masculinity. We adapted earlier role stress scales and assessed equivalence using multigroup confirmatory factor analysis. Role stresses varied more by country than by personal and organizational characteristics. Data were aggregated to the national level. Power distance and collectivism were negatively related to role ambiguity and positively related to role overload.

We gratefully acknowledge the help of Margarita Garcia, with data collection, and of two anonymous reviewers.

Recent decades have seen a steady increase in multinational organizations and in the frequency with which organizations do business far from home. The presumption that a definable set of management skills has worldwide validity continues to command widespread implicit agreement among managers if not among scholars (Boyacigiller & Adler, 1991; Hofstede, 1994). For instance, in recent years master's of business administration (M.B.A.) programs with syllabi like those used in North America have become widely available in Eastern Europe, Russia, China, and elsewhere. But do managers in different countries face settings that truly require similar skills?

To answer such a question is a major undertaking (Jaeger & Kanungo, 1990). In the present article, we provide information relevant to a partial answer by considering the relationship between role stresses and national work culture. Hofstede (1994) classified the work cultures of nations on four dimensions: (1) power distance, "the degree of inequality among people which the population of a country considers as normal"; (2) uncertainty avoidance, "the degree to which people in a country prefer structured over unstructured situations"; (3) individualism, "the degree to which people in a country prefer to act as individuals rather than as members of groups"; and (4) masculinity, "the degree to which values like assertiveness, performance, success and competition, which in nearly all societies are associated with the role of men, prevail over values like the quality of life, maintaining warm personal relationships, service, care for the weak, and solidarity, which in nearly all societies are more associated with the role of women" (Hofstede, 1994: 5–6). These four dimensions form the most widely adopted starting point in research studying management in different nations.

THEORY AND HYPOTHESES

Work Stresses in International Perspective

Each of Hofstede's national work culture dimensions has implications for work stresses. Following the classic study of Kahn, Wolfe, Quinn, Snoek, and Rosenthal (1964), many Western researchers have assessed two role stresses—role conflict and role ambiguity. Role conflict is incompatibility between the expectations of parties or between aspects of a single role. Role ambiguity is uncertainty about what actions to take to fulfill a role.

Recognizing controversies in the role stress literature and issues concerning the international use of North American measures, we wished to tie our study of role relationships to an established empirical base. Other work underway seeks to link more exploratory aspects of our work to this base. We considered House, Schuler, and Levanoni's (1983) study the best available starting point for designing role stress measures. We also added a third aspect of role stress—role overload, or an individual's lack of the personal resources needed to fulfill commitments, obligations, or requirements. Overload appears with role conflict and clarity scales in other research devel-

oped outside the House and colleagues' tradition (Cammann, Fichman, Jenkins, & Klesh, 1983; Kahn et al., 1964; Rousseau, 1977).

Culture and role stresses: Origins and management approaches. A conceptual base for predictions about links between culture and role stress is needed. Researchers can understand these links by recognizing two origins of role stress and two approaches to managing each kind of stress. Role stress can originate either in stressful work events or in role structures whose meanings are inadequate to allow role incumbents to handle work events. Role stress can be managed either through unitary-source or multiple-source response to stress situations. Figure 1 presents our model.

Work events carry ambiguities and complexities. Some are ambiguous because they are unusual or unprecedented, and others because they do not fit people's established interpretive frames. The sheer quantity of work events requiring attention can generate overload. Work events can stimulate role conflicts by making salient otherwise latent inconsistencies in priorities or expectations. Hofstede's description of uncertainty avoidance suggests that managers in cultures rated high on this quality will often be particularly susceptible to stressful events. Managers in high-masculinity cultures will tend to have achievement and assertiveness goals that expose them to stressful work events.

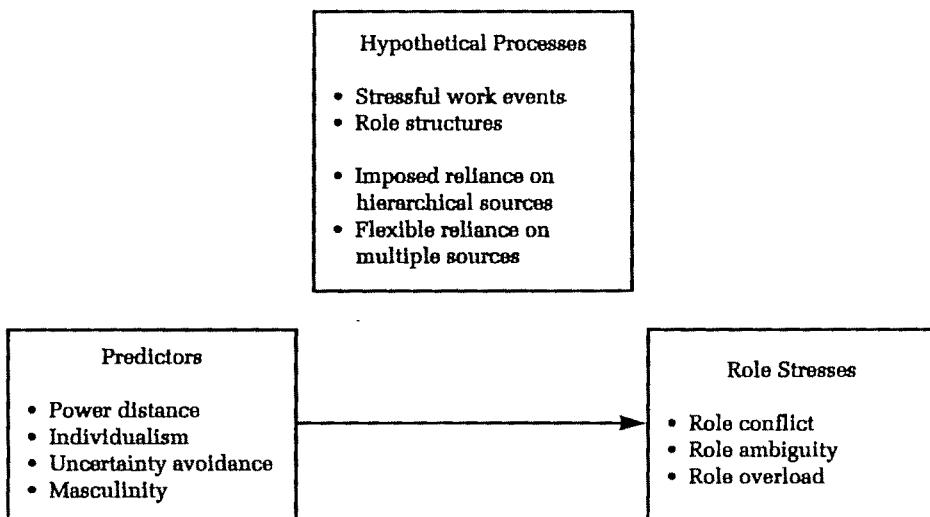
Role stresses can also originate in role structures. Role senders, people holding expectations about a manager's role behavior, can have ambiguous expectations. Role senders can also create conflicting expectations by communicating incompatible or difficult-to-prioritize requirements. Role sender overload can occur from time-consuming requirements to review actions with many parties. Structurally rooted role stresses are likely to be especially noticed in cultures in which uncertainty avoidance is high. Aggressive pursuit of work goals is likely to place managers in role structure-related conflicts in high-masculinity cultures.

Role stresses originating in work events can be managed through effective use of role structures. When power distance is high, people can legitimately manage work events through recourse to an unambiguous, unitary source—feared power holders or a dominating bureaucracy. In a low-power-distance context, these same sources are available, but events can also be managed by referring to other sources.¹ A typical view of an individual in a low-power-distance context would be that problems come from events that superiors can never understand adequately. Resolving problems requires considering the views of many parties. The Western argument that, except in the most routine situations, bureaucratic management becomes overloaded (Galbraith, 1973) reflects a low-power-distance view.

Stresses originating in role structure also need to be managed. When

¹ A low-power-distance preference for self-reliance is not a punitive requirement for self-reliance. Hofstede's power distance items are not phrased with a "fear of dependence" counterpoint to the "fear of the boss" that anchors the high-power-distance end.

FIGURE 1
Conceptual Model



high power distance characterizes a context, they are typically managed by clearly specifying authority. The preferred basis for managing them in a low-power-distance or an individualistic context is through self-reliant action. However, such action is not governed by the punitive fear that Hofstede (1984) argued supports "rule-centrism" in high-power-distance contexts. Self-reliant action gives individuals flexibility to proactively seek a working consensus among multiple sources of meanings. The argument from bureaucratic management theory is that the unitary basis for interpreting events characteristic of high-power-distance contexts should reduce role stress. In this view, authority simplifies control patterns and thus removes opportunities for role stresses introduced through the confusions of complex participative processes. The opposing argument is that legitimate authority is circumvented even when power distance is high when people encounter difficulties. Hence, high power distance may mask the dysfunctions of rigid role structures, but it actually compounds rather than resolves stresses (Goffman, 1961). However, most of the work supporting this counterargument has been based on research in countries in which power distance is relatively low.

Leaders as managers of role stress. In high-power-distance societies, expectations for handling role stresses should focus upon leaders. In such societies, a boss must anticipate the role stresses subordinates will face. Managing role stresses, particularly reducing ambiguity, is part of the way supervisors in North America promote subordinate performance (Jackson &

Schuler, 1985). Bosses have an even more consistent influence in resolving subordinates' role stresses in high-power-distance countries like Taiwan (Bond & Hwang, 1986), India (Sinha, 1981), Iran (Ayman & Chemers, 1983), Brazil (Farris & Butterfield, 1972), and Peru (Whyte & Williams, 1963) than in the United States and Western Europe (Smith & Peterson, 1988). Although handling role stress may depend more upon superiors than on other means in high-power-distance societies, this reliance does not indicate that stress is generally better handled in these societies.

Multiple sources of event meanings. In earlier research (Smith & Peterson, 1988), we presented a deliberately global analysis of role relationships, putting the role of leaders in the context of other sources of meanings. That analysis began with the notion that role relationships combine elements of social interpretation and power in the negotiation of meanings. Different sources—rules, organizational norms, national norms, superiors, colleagues, subordinates, and personal experience—are used to different degrees in different countries (Peterson, Smith, Bond, & Misumi, 1990; Smith & Peterson, 1993) and have different relationships to evaluated performance in different countries (Peterson, Brannen, & Smith, 1994; Smith, Peterson, & Misumi, 1994). For example, managers in such high-power-distance countries as Uganda, Nigeria, Hong Kong-Macao, Korea, and Brazil report more use of rules and procedures than do managers in such low-power-distance countries as Finland and the Netherlands (Smith & Peterson, 1993; Smith et al., 1994). This research suggests that the handling of role stresses may vary with level of power distance. However, it is silent about the ease or success with which role stresses are handled in different contexts.

Hypotheses

Two hypotheses can be directly derived from the preceding discussion of national work culture and work stresses:

Hypothesis 1: Uncertainty avoidance will correspond to high levels of role conflict, role ambiguity, and role overload.

Hypothesis 2: Masculinity will correspond to high levels of role conflict, role ambiguity, and role overload.

However, authors have vigorously advocated two conflicting hypotheses about the implications of power distance and individualism.

Hypothesis 3a: High power distance and low individualism will correspond to high levels of role conflict, role ambiguity, and role overload.

The rationale for this prediction is that power distance and the enforced collectivism with which it is associated makes it difficult for people to resolve problems emerging out of work events. Interpretative structures focusing narrowly on hierarchy and rules are easily overloaded and subverted.

Hypothesis 3b: High power distance and low individualism will correspond to low levels of role conflict, role ambiguity, and role overload.

This alternative is based on the rationale that the emphasis on hierarchy and rules characteristic of collectivist, high-power-distance societies is, in fact, adequate for dealing with most work events. Once such an emphasis is established, it avoids the confusion that can come through multiple bosses and multiple sources of meaning.

These two alternatives suggest a trade-off. The clarifying, ambiguity-reducing focus of hierarchy and formalization in high-power-distance cultures may generate other role stresses. Entirely contrasting with all four predictions is a relativist view supporting the null hypothesis, which is that variations in national work culture may be entirely unrelated to work-related stresses and that all cultures may be able to handle all aspects of human relationships equally well, just differently.

Where does one look for cultural differences? Nations are the basis for Hofstede's analysis of work cultures. Like any clear-cut category, "nation" has limitations.

Some scholars have advocated studying such clear-cut observables as "relational demography" (Pfeffer, 1983), while others are critical of such foci (Pettigrew, 1992). Hofstede recognized that "organizations, occupations and professions, age groups, the sexes, religious groups, ethnic groups, etc." manifest culture differently (Hofstede, 1994: 4) but treated nation as the main unit of culture. Still, alternative clusters of people or social groupings can be built upon less apparent variables (e.g., Ronen & Shenkar, 1985). Countries can be clustered into types or disaggregated into subgroups, such as the tribal groups in Nigeria.

On the one hand, the position that nation has no meaning is too extreme. It discounts the shared historical experiences common to most nations, the host of governmental and social institutions usually shared within a nation, and considerable organizational research that documents attitude and value differences among countries (e.g., Ronen, 1986). Nations now fragmenting into smaller groups highlight the process by which people who share a common culture seek to be governed within a nation state that reflects their heritage.

Still, using a delimiter like nation introduces a conservative research risk. Differences in work subcultures within a nation work against finding relationships between national work culture and role stresses. Comparative research that fails to find nation-level relationships should not make a strong case that relationships at some other collective cultural level do not exist. Before assessing the relationship between role stresses and national work culture dimensions, researchers can empirically assess the risk that comparing nations may not be meaningful. Thus,

Hypothesis 4: Individuals' responses to measures of role conflict, role ambiguity, and role overload will differ according to the nation in which they live.

METHODS

Numerous problems arise in conducting cross-national research (Leung & Bond, 1989; Peng, Peterson, & Shyi, 1991; Roberts & Boyacigiller, 1984). Surveys designed in one country may not tap the types of role stresses found in others. There are also issues associated with translation, response bias, and sampling.

Measures

Role stresses. We chose the measures of role conflict and ambiguity devised by Rizzo, House, and Lirtzman (1970) and revised by House, Schuler, and Levanoni (1983) as a starting point. Although these measures are related to many criteria in Western countries (Jackson & Schuler, 1985), only a few studies have investigated their correlates elsewhere (e.g., Agarwal, 1993). Jackson and Schuler noted that scores on the scales are often positively correlated but argued for preserving the scales as separate measures. Others have recommended adding more dimensions (e.g., Harris, 1991).

The surveys administered for this study included 15 items assessing role ambiguity and 11 assessing role conflict. These include all items identified with the first two role conflict and ambiguity factors in House and colleagues' (1983) study. Four overload items were added from an instrument devised by Pareek (1976) in India. House and colleagues (1983) used a fifth overload item as a role conflict indicator, but it was found to load on a secondary factor. Including a measure originating in India, a country in which power distance is high, provided a counterbalance to the other role stress measures grounded in the lower-power-distance cultures of North America. Responses to all 31 items were on five-point scales, with anchors ranging from "strongly agree" to "strongly disagree." Items were recoded as needed for the analyses described below so that high levels of each item corresponded to high levels of role stress.

National work culture. We used the national scores for the four culture dimensions reported by Hofstede (1983). Their properties are documented elsewhere (Hofstede, 1984). The measures of power distance and individualism are conceptually linked and have a strong negative relationship in the present sample ($r = -.80$).

Sampling

The first two authors selected countries to represent a broad range on Hofstede's (1984) measures and to include many of the national clusters Ronen and Shenkar (1985) identified. Collaborators were recruited at international meetings such as those of the International Association of Applied Psychology and the International Association of Cross-Cultural Psychology. Other collaborators were people with whom the two project organizers had prior relationships.

The 21 participating countries (identified in Table 1 and subsequent tables) represent seven of Ronen and Shenkar's (1985) eight clusters: Nordic, Germanic, Anglo, Latin European, Latin American, Far Eastern, and Near Eastern.² Special efforts were made to include countries that did not fit into any of Ronen and Shenkar's clusters, such as Brazil, Japan, and India, as well as African countries that have been understudied, such as South Africa, Nigeria, and Uganda.

Many multiple-country studies have used heterogenous samples without reporting or correcting for sample uniquenesses (Ronen, 1986: 156-165). Some have studied particular target groups (e.g., Meaning of Working (MOW) International Research Group, 1987) or restricted attention to a single company or industry (Hofstede, 1984). Our strategy was to include a broad sample of around 100 middle managers from each country and to collect detailed demographic information. Most respondents were managers in training programs. Studying middle managers reduces the occupational and organizational effects found to influence work values, norms, and beliefs (Hofstede, 1984: 76-80; Lundberg & Peterson, 1994; MOW International Research Group, 1987). Hofstede (1984: 79) indicated that very low-level employees, especially unskilled manufacturing workers, show signs of operating within a high-power-distance subculture even in otherwise low-power-distance work cultures.

The access impediments that arise in trying to match industries across countries can outweigh the advantages of matching. The narrow industrial base of many small, less developed countries limits the possibility of industry matching (Austin, 1990). The meaning of employment in a particular industry is not fully equivalent between countries. For example, government employment has a higher status in Japan than in most Western countries, producing differences in the attitudes, values, and skill levels of individuals who choose such employment. Less skilled work, like food processing, would have lower status in a more developed than in a less developed country, even when the employer is the same multinational corporation (Austin, 1990). Although industries might be matched on the basis of the physical work being done, such matches might not reproduce respondents' socioeconomic standing within the nations studied.

Recognizing the limitations of any matching strategy, we used the following demographic and organizational characteristics to adjust the role stress scores: individual's age and gender, organizational size, ownership, and task, departmental task, and individual's years in department and years of education. Table 1 shows distribution over the coding categories and descriptive statistics for each country. To make our sampling strategy useful, in each country we included managers from several industries, organizations, and organizational departments and from private and public enter-

² Plans to include the Arab cluster were canceled because of instability in the region during the period of data collection.

prises. The data from the physically and culturally adjacent states of Hong Kong and Macao were pooled, partly because the number of respondents was small and partly because some of the Macao respondents were managers from Hong Kong attending a training program in Macao. Some demographic characteristics (e.g., race, religion) covary so closely with nation that we document them as sample characteristics rather than treat them as statistical controls. In countries in which distinct subcultures might exist (e.g., Nigeria), collaborators were encouraged to include respondents representing these subgroups. Collaborators varied in their success at accessing potential subcultures. Where we know that a country sample reflects what might really be a distinctive subculture, we note that fact; for instance, our South Africans are largely white South Africans.³

Translation Comparability and Measure Equivalence

The collaborators in all countries were experienced social researchers. The questionnaire was translated from English into each target language by the collaborators or competent bilinguals under their oversight. Independent checks were made by back-translation or parallel translation. Since translations, like all intercultural communications, never precisely match (Peng et al., 1991; Pike, 1982: 132–133), the similarity of the measurements across translations needed to be estimated.

Evaluation of equivalence. Developing comparable measures required a series of confirmatory and exploratory factor analyses. First, we assessed the structure of the original role stress measures by applying LISREL confirmatory factor analysis to the data from each country. The analysis specified three factors—conflict, ambiguity, and overload. The items “fixed” to represent role conflict and role ambiguity corresponded to those representing these factors in House and colleagues (1983). The items fixed to represent role overload corresponded to those identified by Pareek (1976) and to the overload item from House and colleagues’ study.

LISREL provides a chi-square index to evaluate the fit of an overall multigroup model as well as goodness-of-fit and root-mean-square-residual (RMSR) estimates to assess the fit for each group. Pedhazur (1982) describes a goodness-of-fit estimate above .90 as indicating a good fit. A chi-square for overall model fit can be directly tested to determine whether significant

³ The Nigerian sample was composed as follows: 106 Yoruba, 33 Igbo, 21 Hausa-Fulani, 6 expatriates, mostly from adjacent black African states, 14 Urhobo-Edo, and 14 individuals who did not answer the question. Most respondents were from the Christian west of Nigeria, and the Moslem north was underrepresented. The Spaniards were almost all Basques (3 were not). The Indians were all from the state of Bihar, which is largely Hindu. The Brazilians all came from Brasilia. Of the Germans, two-thirds were from the former West Germany, and one-third were from the former East Germany. The Japanese were all from Hokkaido. The Ugandans were tribally very mixed. The South Africans were all from Johannesburg, and all but 2 individuals were white. The Mexicans were all from Mexico City. The Singaporeans were virtually all Chinese rather than Malay. Few Indonesians were Chinese. The U.S. respondents were disproportionately from the southwest.

TABLE 1
Demographic Characteristics for All Countries^a

Nations	Age ^b	Men ^b	Organizational Size ^b	Organiza- tional Ownership ^b	Organiza- tional Task ^b	Departmental Task ^b	Religion ^c	Race ^c	Years in Department ^c	Years of Education ^c
Australia	36.9	75.3	3	1	3	6	1	5	4.2	13.7
Brazil	39.7	68.7	63.8	57.4	79.8	18.7	94.2	51.4	6.6	19.5
Finland	43.6	90.7	45.7	57.1	89.3	6.7	1	5		
France	39.5	70.3	46.6	55.6	50.8	22.6	82.4	54.7		
Germany	42.5	92.1	49.3	42.1	4	2	1	5	6.3	16.1
Hong Kong— Macao	33.1	54.8	2	1	54.2	21.2	100	100		
India	38.1	97.0	45.7	49.5	49.5	24.2	1	1	7.9	17.5
Indonesia	40.8	88.9	63.4	78.0	28.7	17.8	90.1	100		
Iran	36.2	97.9	2	3	3	6.7	2	7	5.1	15.8
Japan	46.2	97.9	34.3	45.4	55.6	14.0	57.5	84.8		
Korea	36.8	99.7	42.3	78.1	41.2	33.7	96.9	100		
Mexico	34.1	77.4	87.3	87.3	95.7	47.4	91.5	41.9		
Netherlands	40.0	87.5	54.8	56.7	72.2	52.6	89.2			

TABLE 1 (continued)

Nations	Age ^b	Men ^b	Organizational Size ^b	Organizational Ownership ^b	Organizational Task ^b	Department Task ^b	Religion ^c	Race ^c	Years in Department ^c	Years of Education ^c
Nigeria	39.2	70.4	2	3	3	7	1	1	6.5	14.2
Portugal	42.9	72.3	54.1	42.4	58.9	15.8	61.2	99.0		
Singapore	39.5	50.5	44.6	3	3	6	1	5	10.7	12.8
South Africa	35.9	83.9	48.5	1	3	2	1	7	5.1	14.6
Spain	37.5	61.1	48.9	3	3	11.5	71.6	83.0		
Uganda	37.3	77.6	40.5	1	3	3	6	5	4.1	8.9
United Kingdom	38.5	78.5	49.0	41.9	30.1	20.4	72.6	84.5		
United States of America	38.0	61.2	51.6	46.9	45.9	24.5	90.8	100	4.9	15.0

^a The statistics reported are means for age, years in department, and years of education and percentages for all other variables. Percentages are reported for the most frequently noted response category, coded as follows: organization size—(1) less than 100, (2) 100–1,000, (3) over 1,000; organization ownership—(1) government, (2) a multinational, (3) private, (4) other, (5) mixed government/private; organization task—(1) automated manufacturing, (2) other manufacturing, (3) service, (4) other, (5) automated process production; department task—(1) production, (2) service delivery, (3) sales, (4) marketing/market research, (5) research and development, (6) personnel, (7) financial and accounting, (8) engineering, (9) maintenance, (10) general production site management, (11) general management, (12) training, (13) military, (14) legal, (50) other; religion—(1) Christian, (2) Moslem, (3) Hindu, (4) Jewish, (5) Buddhist, (6) other; race—(1) Black, (2) Hispanic, (3) Arab, (4) Jewish, (5) White, (6) other.

^b These variables were used as controls in a panel cultural analysis conducted prior to the correlation and regression analyses.

^c These variables provide additional sample information.

^d Data on this variable not collected in this country.

variance is left unexplained. Since significant residual variance is typical in social science research, researchers have proposed various norms for evaluating whether the degree of misfit in a model is acceptable. Ratios of chi-square to degrees of freedom below 3 to 5 have been argued to indicate adequate fit (Carmines & McIver, 1981; Wheaton, Muthan, Alwin, & Summers, 1977).

The results (not shown) indicated poor fit in many countries. In some instances, the goodness-of-fit indicators were quite low (below .70) or the root-mean-square residuals were quite high (greater than .20). In other instances, LISREL did not yield a solution (in other terms, we encountered a nonpositive definite theta delta matrix).

Reconstruction of measures. The next step was to refine the measures using exploratory factor analyses in each country (results are available from the first two authors). This step sought to identify items that would (1) form reliable scales and (2) produce satisfactory equivalence in factor structures across countries. The first purpose required retaining as many items as possible to produce good scale reliability. The second required eliminating items loading differently in different countries.

The analysis used a common factor model with varimax rotation. Enough factors were rotated so that at least one factor clearly represented each of the three role stresses. We interpreted a factor as reflecting a particular role stress if three or more items designed to measure the role stress had loadings over .5 on that factor and no loadings over .4 on any other factor. Depending on the country under consideration, three to five factors were needed for at least one factor to represent each role stress. Items were identified that met the criteria just stated.

The criteria were met in 14 or more of the 21 countries for five role ambiguity items, three role conflict items, and all five of the original role overload items. These items were then examined further in the countries in which loadings did not meet the original criteria. Each item's largest loading was found to be on the intended factor in all 21 countries. We retained the following 13 items for further analysis.⁴ Role conflict: I often get involved in situations in which there are conflicting requirements; I receive incompatible requests from two or more people; I have to do things that should be done differently under different conditions. Role ambiguity: I (do not) have clear planned goals and objectives for my job; I (do not) know exactly what is expected of me; I (do not) know what my responsibilities are; I (do not) feel certain about how much responsibility I have; My responsibilities are (not) clearly defined. Role overload: There is a need to reduce some parts of my role; I feel overburdened in my role; I have been given too much responsibility; My work load is too heavy; The amount of work I have to do interferes with the quality I want to maintain.

⁴ The words in parentheses were not included in the questionnaire but indicate the meaning of the item after we reverse-coded it for the analysis.

We then applied LISREL multisample confirmatory analysis to these items, grouping countries into three sets. The first set, which included all countries in which surveys were administered in English, allowed assessment of national variability within a single translation. The second set included all European languages, those sharing the closest historical ties with the language of origin. The third set included all non-European translations. In the latter two sets, the four countries in which English is the first language for most of the population (Australia, South Africa, the United Kingdom, and the United States) were included as a point of reference allowing evaluation of whether factor loadings were invariant across samples.

Two analyses were conducted. The first tested the hypothesis that three correlated factors represent role stress. The second tested the hypothesis that factor loadings (*lambdas*) were equivalent across countries. In several instances, noted below, data from a country with few respondents were combined with those from another with the same or a very similar language.

Final LISREL equivalence estimates. Table 2 gives results of the final LISREL analyses. For the English language countries, the goodness-of-fit indexes range from .85 to .95, and the root-mean-square residuals range from .05 to .13 in the three-factor model. In the model specifying equal factor loadings, goodness of fit drops slightly to range from .79 to .95, and the root-mean-square residuals drop slightly to a .06 to .18 range. The chi-squares for both models are less than twice the degrees of freedom. However, the chi-square is significantly lower for the model specifying equal factor loadings ($\chi^2 = 224.23$, $df = 80$, $p < .01$). These fit indexes, generally satisfactory in themselves, also provide a within-language base for evaluating how translations into other languages affect model fit.

For the European language countries (excluding the English-speaking countries), goodness of fit ranges from .89 to .94 and the root-mean-square residual from .06 to .07 in the three-factor model. In the model testing equal loadings, goodness of fit drops to .87 to .91, and root mean square drops to .08 to .12. For the non-European language group (excluding the English-speaking countries), goodness of fit ranges from .87 to .94 and root mean square from .04 to .11 in the three-factor model. In the model testing equal loadings, goodness of fit ranges from .84 to .92 and root mean square from .05 to .15. For both the European and non-European language groups, including the combined Anglo-cluster countries, chi-squares approximating two times or less their respective degrees of freedom indicate good fits. In each case, the fit is significantly better for the less constrained three-factor model than for the model equating factor loadings (European, $\chi^2 = 174.71$, $df = 50$, $p < .01$; non-European, $\chi^2 = 149.69$, $df = 40$, $p < .01$).

Overall, the results indicate that the 13 role stress items retain their meaning in all countries. Equivalence is just as great between some countries that are linguistically distant as between linguistically related countries. The role overload items have the most consistent structures and the role conflict items the least consistent structures across countries (details are available from the first two authors). The decline in fit when loadings are specified as

TABLE 2
Results of Multigroup Confirmatory Factor Analyses^a

Nations	Three-Factor Solution		Equal Loadings		
	Goodness of Fit	Root-Mean-Square Residual	Goodness of Fit	Root-Mean-Square Residual	Difference in χ^2 (df)
<i>English translations</i>					
United States	.955	.045	.945	.060	
United Kingdom	.890	.067	.871	.064	
Australia	.923	.066	.917	.074	
Hong Kong-Macao	.897	.063	.854	.125	
Uganda	.865	.107	.838	.123	
Nigeria	.906	.069	.894	.069	
South Africa	.846	.081	.840	.093	
India	.846	.134	.794	.182	
Singapore	.854	.101	.785	.153	
χ^2 (df)		953.89 (558)		1,178.12 (638)	224.23 (80)
<i>European translations</i>					
Anglo	.904	.041	.961	.047	
Finland	.917	.057	.884	.097	
Netherlands/Germany	.922	.062	.912	.075	
Spain/Mexico	.894	.069	.873	.089	
Portugal/Brazil	.940	.072	.910	.123	
France	.906	.069	.891	.086	
χ^2 (df)		870.20 (372)		844.91 (422)	174.71 (50)
<i>Non-European translations</i>					
Anglo	.964	.041	.958	.051	
Indonesia	.909	.051	.896	.063	
Iran	.885	.109	.836	.154	
Japan	.874	.058	.846	.088	
Korea	.939	.040	.924	.055	
χ^2 (df)		544.89 (310)		694.58 (350)	149.69 (40)

^a The model specification for the three-factor results is LX = PS. The model specification for the equal loadings results is LX = IN. All chi-squares show a significantly better fit ($p < .01$) for LX = PS than for LX = IN.

invariant indicates that the loadings of some items on their principal factors vary in some cases by country (notably, Hong Kong-Macao, Uganda, Iran, India, and Singapore). Overall, the values of the fit indexes compare favorably to those reported in confirmatory analyses of the full set of role conflict and ambiguity items in U.S. samples (e.g., Harris, 1991) and are consistent with general norms of good fit.

Table 3 gives descriptive statistics and reliability coefficients for each measure in each country. The reliability of the role conflict measure in several countries is below Nunnally's (1978) standard of .7. Hence, low reliability is a possible reason for any nonsignificant role conflict findings. Otherwise, the alphas for the individual-level variables are generally satisfactory. Based on country averages, the correlation between role ambiguity and role conflict is .30 (n.s.), the correlation between role ambiguity and role overload is .33 ($p < .05$, one-tailed test), and the correlation between role overload and role conflict is .44 ($p < .02$, one-tailed test). The finding that work role conflict is more closely associated with work role overload than with work role ambiguity converges with the correlations between the three measures on the individual (within-country) level.

TABLE 3
Descriptive Statistics, Role Stress^a

Nations	N	Alpha			Adjusted Mean		
		Ambiguity	Conflict	Overload	Ambiguity	Conflict	Overload
Australia	182	.82	.62	.80	2.45	3.34	2.73
Brazil	84	.85	.58	.84	2.11	3.27	2.77
Finland	119	.79	.56	.83	2.10	3.57	2.41
France	130	.82	.65	.80	2.17	2.83	2.60
Germany	77	.85	.78	.83	2.18	2.91	2.53
Hong Kong-Macao	75	.70	.57	.84	2.37	3.35	3.16
India	99	.58	.63	.80	2.26	3.75	3.28
Indonesia	104	.69	.54	.62	1.97	2.93	2.52
Iran	98	.81	.57	.77	2.17	3.00	2.96
Japan	95	.76	.55	.87	2.06	3.70	2.56
Korea	288	.73	.56	.80	2.21	3.20	3.01
Mexico	115	.78	.65	.72	1.79	2.63	2.42
Netherlands	111	.68	.72	.76	2.17	3.14	2.67
Nigeria	172	.84	.61	.82	2.11	3.48	3.21
Portugal	220	.64	.70	.82	2.46	3.14	2.78
Singapore	100	.79	.70	.89	2.17	3.21	3.15
South Africa	89	.87	.54	.82	2.42	3.31	2.74
Spain	33	.72	.70	.67	2.27	3.01	2.98
Uganda	99	.48	.66	.80	2.31	3.01	2.63
United Kingdom	132	.82	.61	.82	2.37	3.33	2.65
United States	301	.79	.56	.79	2.36	3.25	2.66

^a Scale means are adjusted for personal and organizational characteristics (see Table 1, note b).

Hypothesis Tests

Hypothesis 4, stated at the individual level, calls for a "pancultural analysis" (Leung & Bond, 1989) involving pooling the data from all countries. The confirmatory factor analyses showed enough equivalence across countries to support such pooling. We conducted separate regression analyses for each role stress, first entering a block of dummy-coded covariates and then adding a block of dummy-coded nation-level measures to test the hypothesis that nation explains additional variance.

National country averages would be meaningful if the preceding analysis showed national effects on individual responses. Analogous to "climate" variables in organizations (Glick, 1985), national averages reflect typical levels of attitudes. Hofstede (1984) tested many hypotheses about the relationship between his four national culture dimensions and mean country levels of work attitudes.

To test Hypotheses 1, 2, 3a, and 3b, we used national averages of role conflict, ambiguity, and overload ratings to predict each of the national culture variables. Although variations in attitudes by nation have been replicated in prior research (Ronen, 1986), any single study should consider differences in response bias based on nation.⁵ Such bias has not ordinarily been taken into account in multiple-translation management research (for an exception, see Franke, Hofstede, and Bond [1991]). The present role conflict and overload items were phrased so that a high value meant high role stress, and the role ambiguity items were phrased so that a high value meant low role stress. We took possible national differences in response bias into account by including, in multiple regression analyses, three role stress measures derived from items with these two alternative phrasings. If relationships between role stress and the national culture variables were due to generalized tendencies for people in one country to respond to all items more positively than those in another (Deutscher, 1973; Mitchell, 1973), all relationships should have been similar in sign and magnitude. In that case, entering one role stress first should have substantially reduced or eliminated any incremental effects of the others. As noted below, the regression analysis results are difficult to interpret as response artifacts.

RESULTS

Table 4 presents the results of hierarchical regression analyses testing the relationship of nation to the role stresses. Consistent with Hypothesis 4,

⁵ Hofstede (1984) and others (Leung & Bond, 1989) constructed strictly nation-level measures after aggregating items to that level. Data were first standardized across items and within country after being standardized across items and within-person. Scaling procedures (e.g., factor analysis) were then used to construct scales based on the country means. Following this practice with the present data produced factors that are difficult to interpret. The three dimensions of role stress used here are thus best viewed as fundamentally individual-level constructs that show enough variability among (compared to within) countries to make between-country comparisons meaningful.

TABLE 4
Results of Regression Analyses Predicting Role Stress

Role Stresses	ΔR^2 , Demographic Characteristics	ΔR^2 , National Measures	Total R^2
Ambiguity ^a	.026**	.050**	.076**
Conflict ^b	.019**	.082**	.101**
Overload ^c	.022**	.079**	.101**

^a The significance of the covariate block is almost wholly due to age ($t = -6.80$, $p < .0001$).

^b The significance of the covariate block is largely due to age ($t = -3.28$, $p < .001$). Also significant are gender ($t = 2.55$, $p < .05$), working in a financial or accounting department ($t = -2.25$, $p < .05$), and government ownership ($t = 2.46$, $p < .05$).

^c The significance of the covariate block is due to size of organization ($t = -3.49$, $p < .0001$), working in an engineering department ($t = 3.073$, $p < .01$), working in R&D department ($t = 2.94$, $p < .01$), and gender ($t = -2.49$, $p < .05$).

** $p < .01$

nation explains significant variance after personal and organizational characteristics were controlled. Glick (1985) suggested using an intraclass correlation coefficient $[(BMS - WMS)/BMS]^6$ to estimate the reliability of aggregate scores. The aggregate reliabilities of the role ambiguity, role conflict, and role overload scales are .87, .93, and .93, respectively.

Table 5 presents zero-order correlations and results of multiple regression analyses testing the relationship between the role stresses and the national culture variables. Given the small samples at the national level ($N = 21$), we note marginal significance levels ($p < .10$). Results shown in the table are based on the final step of a hierarchical regression analysis. The first step, in which role conflict is entered alone, shows a nonsignificant R^2 for both individualism ($R^2 = .01$) and power distance ($R^2 = .03$). The second step, with role ambiguity and overload entered together, shows a significant increase in R^2 for both individualism ($\Delta R^2 = .33$, $p < .01$) and power distance ($\Delta R^2 = .54$, $p < .01$). Residuals of power distance (with individualism controlled) and individualism (power distance controlled) were also regressed against the role stress measures. No significant effects were found, thus indicating that the relationships of individualism and power distance with role stresses are redundant with one another in the present sample. No significant relationships emerged between any of the three role stresses and the scores Hofstede reported for either masculinity or uncertainty avoidance. Hypothesis 1, proposing that uncertainty avoidance will be positively associated with role stress, is not supported. Hypothesis 2, proposing that masculinity will be associated with high role stress, is also not supported.

The regression results support Hypothesis 3a for role overload and Hypothesis 3b for role ambiguity. Individual ratings averaged over nations indicate that high power distance and low individualism are associated with high levels of role overload and low levels of role ambiguity. The finding that

⁶ BMS = between mean square; WMS = within mean square.



TABLE 5
Results of Regression Analyses and Zero-Order Correlations Predicting National Culture Variables^a

National Measures	Role Conflict		Role Ambiguity		Role Overload		<i>R</i> ²
	<i>b</i>	<i>r</i>	<i>b</i>	<i>r</i>	<i>b</i>	<i>r</i>	
Uncertainty avoidance	-.13	-.25	.08	-.20	-.27	-.34	.14
Masculinity	.29	.19	-.10	-.07	-.20	-.12	.09
Individualism	.19	.12	.51*	.38	-.60**	-.38	.34**
Power distance	-.27	-.18	-.55**	-.42†	.69**	.42†	.57**

^a *N* = 21. National means for the three role stress scales are adjusted for personal and organizational characteristics (see Table 1, note b).

† *p* < .10

* *p* < .05

** *p* < .01

the positively correlated measures of role ambiguity and overload have opposite relationships to the national culture variables reduces the possibility that the relationships are due to national differences in response bias. When role conflict is entered first to further control for response bias, significant increases in variance explained are still found when role ambiguity and role overload are entered. When role conflict is omitted from the regression equations by a backward stepwise procedure deleting nonsignificant predictors, the beta coefficients for role ambiguity are .55 (*p* < .01) predicting individualism and -.61 (*p* < .01) predicting power distance. Also, the beta coefficients for role overload then become -.54 (*p* < .01) predicting individualism and .61 (*p* < .01) predicting power distance.

DISCUSSION

The present study addresses one aspect of the general problem of whether U.S. management research and practice applies abroad. Specifically, we considered what role stresses are likely to arise in view of various national levels on Hofstede's work culture dimensions. Despite the study's limitations, the results are rather clear: Role stress varies substantially more by country than by demographic and organizational factors.

Some expected relationships were not found. Average role stress was not associated with high uncertainty avoidance, even though Hofstede's uncertainty avoidance scale contains a stress item. The expected link of role stress to masculinity was not based on the content of Hofstede's work goal-based measure but on his argument that a certain configuration of goals was associated with stress. The present results show no such relationships.

The power distance and individualism concepts are the ones most closely linked to the role stresses. Overall, managers from high-power-distance countries report greater role overload than managers from low-power-distance countries. The role overload finding is consistent with the

ory suggesting that overload arises from either work events or role structure stresses best resolved through multiple-source discussions. The marginally significant role ambiguity finding indicates a trade-off: reducing ambiguity through hierarchy and rules can come at the cost of overload. This finding is consistent with classic arguments for bureaucracy and with the emphasis in the role literature on leaders as a principal source for handling ambiguity.

Low-power-distance countries are predominantly those Western industrialized countries that fall into Ronen's (1986) Anglo, Germanic, and Nordic clusters. Those higher on power distance disproportionately include Latin American and Far Eastern cluster countries and countries from among the developing nations of the world. Viewed in this light, the power distance finding suggests that managers in many non-Western contexts have to contend with higher levels of role overload but lower levels of role ambiguity than do those in Western countries. Interpretation of this result needs to reflect the items retained in the present scales. Managers in non-Western contexts tended to indicate that they knew their goals, expectations, and responsibilities. They felt, however, that their responsibilities and work loads were excessive. Put colloquially, Western middle managers are more likely to see the amount they have to do as manageable but to be unsure about how to do it. Middle managers in non-Western countries may believe they know their roles quite clearly but feel they have too much work to do it all well. The role stress results do not all accord exactly with the Western–non-Western split. As Table 3 shows, Mexico and Indonesia, categorized by Hofstede as particularly high on power distance, score low on all the role stress measures.

The present study highlights the etic properties of this data set. Our focus was aspects of role stress that can be measured consistently across countries. The results support increased analysis of role overload. The other role stress measures could be strengthened. Only three role conflict items, for example, were usable. Adding more items could strengthen the scale. The process of adding such items to improve an etic concept is not the same as testing new items in a single country. It should move toward what Boyacigiller and Adler (1991) described as a global research approach. It should involve systematically reconsidering, in collaboration with knowledgeable scholars from various countries, what role conflict fundamentally means and what are likely to be its most generalizable qualities. The limited equivalence for the original set of items invites further analysis for particular cultural groups. Such analysis should elaborate aspects of role relations particularly tailored to specific nations or other cultural groups.

The present study began by raising the question of the general applicability of North American models. The results obtained indicate that it is time to move beyond extreme answers to this question. Avoiding the excessive imposition of North American ideas means separating that which is distinctly North American from that which is general to organizations. Role conflict, ambiguity, and overload contain a core of meaning wrapped up in the nature of relationships within formal organizations. The factor analysis

results indicate that managers from around the world should be able to communicate with one another about role stresses. However, as in any cross-cultural communication, an overlay of culture-specific meanings appears in the poor fit of the original factor structures. This emic quality may create confusion when academics teach about role stress from a U.S. M.B.A. text or conduct research using role stress measures in their original form.

Barley and Kunda (1992) argued that rhetoric in North American management follows cycles. At present, this rhetoric emphasizes the sort of diversity-sensitive, consensual management that is most consistent with low-power-distance cultures. The present study cannot offer an overall evaluation of that preference. It can only suggest possible trade-offs between role overload and ambiguity in the managerial practices typical of different countries. Norms of tolerance for alternative, culturally dependent management should not blind trainers, scholars, and managers to the difficulties and advantages typical of those alternatives.

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SPEED, STEALTH, AND SELECTIVE ATTACK: HOW SMALL FIRMS DIFFER FROM LARGE FIRMS IN COMPETITIVE BEHAVIOR

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This study examined how small firms differ in their competitive behaviors from their large rivals in an industry and explored the implications of differences for performance. Data on competitive moves and countermoves exchanged by major U.S. airlines supported the predicted differences. The small airlines more actively initiated competitive challenges and were speedy but low-key, even secretive, in executing their actions. They were also less likely and slower to respond when attacked and, contrary to expectations, their responses were more visible than those of their larger opponents. Deviations from group norms hurt performance for both the large and small firms.

Strategic management concerns the health and survival of firms, and the pressure on chances of survival in an industry is certainly greater for smaller firms than for their larger rivals (Aldrich & Auster, 1986; MacMillan, 1980). Therefore, a basic understanding of how organizational size influences competitive behavior is of paramount importance.

Although researchers concerned with organizational size have noted that what applies to large firms may not apply to small ones (Blau & Schoenherr, 1971; Pugh, Hickson, Hinings, & Turner, 1968), they have generally stopped short of investigating small and large firms engaged in intraindustry competition. In contrast, the literature on small business and military tactics offers abundant normative recommendations to small firms, which are generally advised to "avoid meeting giants head-on," "be flexible and move fast," and "retain competitive initiative by mounting guerrilla attacks" (e.g., Cohn & Lindberg, 1974; MacMillan, 1980). Unfortunately, these strategic prescriptions for underdogs generally have not been grounded in empirical findings.

We would like to thank Eric Abrahamson, Warren Boeker, Laura M. Brown, Jing-Lih Farh, James W. Fredrickson, Kathryn R. Harrigan, Samuel Kotz, John Michel, Ian C. MacMillan, Murray Low, and two of this journal's anonymous reviewers for their helpful comments on an earlier draft of this article. Columbia University's Management Institute provided support for the project. We are grateful for access to the airline database jointly assembled by the first author and Martin J. Gannon, Curtis M. Grimm, and Ken G. Smith. Kuo-Hsien Su helped in variable construction and data analysis.

Strategy researchers have approached this issue by focusing on how low-market-share firms compete against their large rivals (Hambrick, MacMillan, & Day, 1982; MacMillan, Hambrick, & Day, 1982; Woo, 1983; Woo & Cooper, 1981, 1982). Challenging the prevalent wisdom that market share has an unequivocal and universally positive effect on profitability—an idea derived from the Profit Impact of Market Strategy (PIMS) findings (Boston Consulting Group, 1974; Gale, 1972; Henderson, 1979; Strategic Planning Institute, 1977)—some scholars have demonstrated two important findings: (1) low-share firms can be as effective as their high-share counterparts and (2) low-share firms require different competitive strategies to be successful.

In spite of the importance of this stream of research, it has focused on the content of strategy profiles, on such issues as degree of focus and niche-seeking strategies, as represented in aggregate operating statistics. A systematic study of how size shapes actual competitive interaction has yet to appear, nor have researchers made any attempt to explore process-based rather than content-based attributes of strategy. Consequently, the behavioral differences between the small and large firms competing in an industry and the means by which they build advantage via day-to-day competition, have been left unexplored.

This study explored the basic, yet unanswered, question of how relatively small firms within a given industry should act and react to prosper in a competitive arena. Specifically, we explored two related questions: How do small firms differ from their large rivals in their competitive behaviors? and Do the competitive behaviors associated with good business performance differ for small and large firms? It should be noted that, as in previous strategy research (cf. Summer, 1980) and macro organizational theory (cf. Miles, 1980), competitive behavior here refers to the evidence of firm-level strategic decisions and actions. We did not directly observe actual decision making or human behavior.

Using data on actual competitive engagements in the U.S. airline industry, this study examined differences between small and large airlines in two important attributes of competitive actions: propensity for action and action execution speed. We also examined the following aspects of competitive responses: responsiveness, response announcement speed, and response execution speed.

THEORETICAL BACKGROUND

Significance of Organizational Size

A firm can be considered small in two different but related ways—in terms of sheer organizational size or in terms of its industry market share. Though size and market share are conceptually different, empirically they are correlated. Of course, within an industry composed primarily of single-business firms, like the focal industry in this study, the two tend to correspond greatly.

Organization size has long been considered one of the most significant

contingency variables in macroorganizational studies (Kimberly, 1976), and its relationship with other important constructs, such as structure (Singh, 1986), has been widely examined. As a result, Hofer (1975) identified size as a critical contingency variable moderating the relationship between strategy and performance, and Smith, Guthrie, and Chen (1989) supported this idea empirically. In addition, size has been shown to affect such variables as the probability of change in core features (Kelly & Amburgey, 1991), R&D expenditures (Cohen & Klepper, 1993), and innovation (Acs & Audretsch, 1988; Hitt, Hoskisson, & Ireland, 1990).

Large size has been seen as giving a firm such advantages as economies of scale, experience, brand name recognition, and market power (Hambrick et al., 1982; Woo & Cooper, 1981, 1982). Conversely, smallness has been credited with increasing flexibility in production (Fiegenbaum & Karnani, 1991) and price (MacMillan et al., 1982; Tellis, 1989) and with enhancing speed (Katz, 1970) and risk-seeking behavior (Hitt, Hoskisson, & Harrison, 1991; Woo, 1987). In addition, Bloom and Kotler (1975) argued that small competitors can initiate certain types of attacks against larger opponents, such as private antitrust suits, that larger companies cannot generally use. Cooper, Willard, and Woo (1986) provided further evidence of the effectiveness of this kind of competitive device.

Market share has long been identified as one of the most important contingency variables affecting a firm's strategy and the relationship between its strategy and performance (Ginsberg & Venkatraman, 1985; Hofer, 1975; Prescott, Kohli, & Venkatraman, 1986). Both the Boston Consulting Group (1974) and PIMS (1977) studies pointed to market share as a determinant of profitability. In contrast, Hamermesh, Anderson, and Harris (1978) suggested some successful low-share strategies, such as creative segmentation and targeted R&D. Empirically, Woo and Cooper (1981, 1982), using the PIMS database, established the existence of effective low-share businesses and identified the competitive strategies contributing to their success, which included a selective focus on price and quality. Hambrick and colleagues (1982) examined strategic attributes for both high- and low-share businesses using the PIMS database, finding that low-share businesses tended to have narrower domains and to be less vertically integrated. In a companion study, MacMillan and colleagues (1982) suggested such profitable low-share strategies as "going for the crumbs" (Katz, 1970).

The following ideas seem to emerge from the research outlined above: small firms in an industry can be as successful as their large rivals; however, their success is determined mainly by the competitive strategies they employ; and different strategies are required for small firms to compete effectively against their larger rivals in an industry.

However, in examining how small firms compete, previous research has focused predominantly on the content of their strategic profiles, such as selective focus and niche-seeking strategy. Instead of studying the actual strategic competitive behaviors of firms, researchers have examined organizational states, as represented by cross-sectional or year-end financial or

operational statistics (Harrigan, 1983). Although this approach provides a general sense of a firm's strategic posture, researchers adopting it run the risk of assuming that each firm pursues its own strategic objectives independent of its competitors' objectives.

In reality, competition is a dynamic process by which market participants engage each other through a series of moves and countermoves. As Porter noted, "A central characteristic of competition is that firms are mutually dependent . . . the outcome of a competitive move by one firm depends at least to some extent on the reactions of its rivals" (1980: 88). Thus, if researchers are ever to understand how small firms achieve competitive success, they must look in detail at how such firms fight their day-to-day battles and how they engage in the process of competition as well as at the aggregate content of their strategies.

Therefore, it is important to move the level of analysis to the basic building blocks of competitive strategy: actions and responses. Of course, in order to carry out a study at the firm level, it is necessary to aggregate data. However, a more meaningful representation of a firm's strategy is possible if the data aggregated are based on the actual competitive exchanges between firms, the approach taken in this study.

Competitive Interaction: Actions and Responses

Researchers have recently started to examine empirically factors that shape actual competition at an action-response level (Chen & MacMillan, 1992; Chen, Smith, & Grimm, 1992; MacMillan, McCaffery, & Van Wijk, 1985; Smith, Grimm, Gannon, & Chen, 1991). The action-response dyad is theoretically consequential because it is at this level that actual competitive engagement occurs—where competitors enact their strategies, secure new customers, test their opponents' mettle and capabilities, defend their reputations, and signal their toughness (Chen & MacMillan, 1992).

An action is defined in this study as a specific and detectable competitive move initiated by a firm, such as introducing a new product or entering a new market, that may lead to the firm's acquiring its rivals' market shares or reducing their anticipated returns. Similarly, a response is a specific and detectable countermove, prompted by an initial action, that a firm takes to defend or improve its share or profit position in its industry (Chen et al., 1992; Chen & MacMillan, 1992).

Previous research has identified some specific attributes of competitive actions and responses that are critical to understanding strategic interaction, competitive behaviors, and their performance implications. For instance, MacMillan and colleagues (1985) found that the greater the degree of an action's visibility, the faster the competitive response, but that the greater the organizational complexity of a responder, the more delayed the response. Chen and colleagues (1992) also found that strategic (as opposed to tactical) actions, and actions requiring lengthy execution time, tended to

reduce the number and speed of rivals' responses. Moreover, Chen and MacMillan (1992) demonstrated that competitive interactions are directly relevant to performance, as evidenced by market share gains by action initiators and early responders.

These previous studies have investigated either competitive interactions at the action-response level or competitive repertoires (Miller & Chen, 1994) at the firm level. Examining the differences in the competitive behaviors of different types, or classes, of firms within an industry is a logical extension of this research. As noted earlier, size is one of the most important classification, or contingency, variables in organization and strategy research. This research represents the first effort to study how two groups of firms within an industry, different in organizational size, vary in their competitive behaviors. Specifically, this study builds on earlier research by characterizing firms' competitive behaviors along attributes of actions and responses, to explore the important question of how small firms act and respond differently to competition than do their larger rivals in the industry.

Characterizing a Firm's Actions and Responses

In line with previous research on competitive interaction, this study examined the competitive behavior of firms in terms of important attributes of the actions and responses they undertake. The selected attributes reflect three key strategic constructs emerging from this research stream and emphasized in the strategy literature: propensity for competitive engagement, speed, and visibility.

Propensity for competitive engagement indicates how active and responsive a firm is in its arena. A firm that initiates many actions or always responds when actions are launched against it, or both, can be said to be highly competitively engaged. The significance of this concept can be traced to strategy researchers such as Hitt and colleagues (1991), Katz (1970), Lieberman and Montgomery (1988), MacMillan (1980, 1982), and Porter (1980, 1985). These authors have suggested that a firm should be both proactive and responsive in its environment in terms of technology and innovation, competition, customers, and so forth. Proactiveness involves taking the initiative in an effort to shape the environment to one's own advantage; responsiveness involves being adaptive to competitors' challenges. We used two specific attributes to capture this construct: Propensity for action, a firm's tendency to initiate competitive attacks, and responsiveness, its tendency to move against competitors' attacks.

Speed has emerged as one of the most important strategic constructs in recent strategy research (Eisenhardt, 1989, 1990; MacMillan et al., 1985; Smith & Grimm, 1991), and its practical significance has been very well recognized (Stalk, 1988; Vessey, 1991). This study examined speed on three fronts that have been demonstrated to be critical in competitive interaction: action execution speed, the length of time required to implement an action; response announcement speed, the length of time used to prepare and an-

nounce a response; and response execution speed, the length of time required to implement an announced response.

Visibility indicates the amount of information available about a competitive move, whether action or response. Highly visible moves tend to elicit competitive responses (Chen & Miller, 1994). This idea is rooted in the behavioral theory of the firm, which includes the assumption that time and attention are scarce resources and that managers will attend only to those moves that draw salient external attention, particularly the attention of key stakeholders (March & Olsen, 1976; Weick, 1976). Moreover, the coalitional composition of firms (Cyert & March, 1963) further suggests that the greater the attention drawn to a move, the more the marketplace is alerted to it and its implications. The social control is often so strong that a firm's decision to react or counterreact to visible moves may not be the result of preference "but . . . the result of demands, constraints, or forces that the social actor may have little control over or even cognizance of" (Pfeffer, 1982: 8). In this study, we examined the visibility of both actions and responses.

It should be noted that the attributes we selected for study were those for which objective indicators could be developed. Given the great sensitivity of information about competitive interaction, not all phenomena of potential interest are amenable to direct or reliable measurement (MacMillan et al., 1985). Thus, these seven attributes represent only a subset of all potentially important variables capturing competitive behavior.¹

HYPOTHESES

The focus here is on the differences in competitive behaviors between small and large firms within an industry; in the context of our study "small" and "large" thus indicate relative rather than absolute size.² Although some of the arguments used to develop our hypotheses may be more relevant to absolute size, they are nonetheless also applicable to relative size. That is, firms that differ greatly in size will exhibit differences in competitive behavior—perhaps not of the magnitude of differences between absolutely large and small organizations, but significant differences nonetheless.

To develop our hypotheses, we drew from the work of various researchers who have made assertions or offered explanations about the tendencies of large and small firms and the issues each faces. These posited explanations may reasonably affect or cause the relationships we expected to observe, although we did not have the data to examine the underlying causal phenomena themselves. We did not attempt to test any of the suppositions

¹ This limitation explains, for example, why there is no parallel to response announcement speed on the action side—information on the length of time that an initiator takes to formulate and announce an action is generally not available.

² Most theorists would consider the large airlines in our sample to be absolutely large organizations; the small airlines, although much smaller, would not be considered absolutely small.

drawn from these prior studies, but rather, turned to some of these theories to develop arguments and predictions. We first consider the descriptive differences between small and large firms along several attributes of competitive actions and responses and then explore performance implications.

Competitive Actions

Propensity for action. Depending on their size compared to competitors, firms are likely to vary in their basic propensity to initiate competitive moves. Largeness is often associated with abundant slack resources (Singh, 1990), which may give a firm a greater ability to attack competitors. However, behaviorally, size is likely to breed complacency and inertia (Hannan & Freeman, 1984); managers of large firms may feel that they are rich and powerful enough to ignore their rivals (Cyert & March, 1963; Halberstam, 1986). Largeness is also associated with structural complexity and bureaucracy, which often protect firms from competition (Singh, 1990) and promote insularity (March, 1981). The institutional legitimacy that such firms enjoy also allows them to resist or defy pressure for adaptation (Aldrich & Auster, 1986; Meyer & Zucker, 1989). Finally, large firms tend to be risk-averse (Hitt et al., 1990), and they are more likely to be under regulatory and public scrutiny, which may limit their competitive leeway (Bloom & Kotler, 1975; Cooper et al., 1986; Fombrun & Shanley, 1990; Scherer, 1980).

Small firms, by contrast, are motivated to constantly seek threats and opportunities in order to survive and prosper (Aldrich & Auster, 1986; Katz, 1970). They have a greater need than their larger rivals to act aggressively in the market and to challenge the status quo by initiating competitive actions. Small firms also have some competitive devices at their disposal that are typically not available to their larger rivals (Bloom & Kotler, 1975; Cooper et al., 1986). Small firms are also noted for their use of guerrilla warfare tactics, constantly engaging in attacks to "retain the competitive initiative" (Harrigan, 1985; MacMillan, 1980).

Hypothesis 1a: Small firms will show a greater propensity for action than their larger rivals.

Action execution speed. Size is also likely to affect the way small firms behave when initiating competitive attacks. Structural simplicity and streamlined operations allow small firms to be flexible and to execute attacks quickly. In addition, small firms often focus on certain market niches (Carroll, 1984) and hence tend to make competitive moves in limited domains, enhancing swiftness. Strategically, they may have a greater need than their larger rivals to surprise their competitors and maximize market impact via rapid execution. Therefore, the competitive moves small firms initiate often resemble guerrilla attacks in their rapidity of execution and their tendency to prevent wars of attrition, which require substantial resources and a prolonged period of confrontation (Harrigan, 1985; MacMillan, 1980).

In contrast, large firms are noted for a high degree of structural complexity and bureaucracy (Mintzberg, 1979), which will constrain their infor-

mation-processing capacity (Galbraith, 1977) and the speed of their competitive activity (Smith et al., 1991).

Hypothesis 1b: Small firms will execute actions faster than large firms.

Action visibility. Another essential component of guerrilla tactics is secrecy. Small firms are more likely to engage in indirect and subtle attacks that the marketplace may not initially recognize as competitive challenges (MacMillan, 1980). They are also likely to attempt to turn their relative obscurity to their own advantage by engaging in covert actions.

In contrast, large firms will often attempt to make their competitive moves as visible as possible in order to signal their commitment, in the hope of intimidating competitors and deterring response (Ghemawat, 1991). Large firms are also more likely to initiate highly visible, direct, and massive attacks on their competitors (MacMillan, 1980). In addition, in order to meet their obligations to a wide variety of stakeholders, large firms tend to make their competitive decisions public. Large firms may even capitalize on and accentuate their visibility (Fombrun & Shanley, 1990) by making formal, widely publicized announcements of their actions, even using their star executives to intensify the message.

Hypothesis 1c: Competitive actions initiated by small firms will show a lower degree of visibility than those initiated by larger firms.

Competitive Responses

Responsiveness. Large and small firms under direct competitive attack will vary in their responsiveness. Previous research has demonstrated that firms with more slack resources are more likely to respond (Smith et al., 1991). Large firms generally have more slack resources than their smaller counterparts. Their size and stature allow them to be responsive followers instead of initiators, who have to bear the risk of being first. IBM, for example, acquired the reputation of being an aggressive responder in the early days of the PC industry, letting others make the first move and jumping in quickly. In contrast, smaller firms under attack often cannot retaliate, even if they desire to do so, because of resource constraints.

Moreover, firms are sometimes propelled to respond to attacks to protect their reputations (Camerer & Weigelt, 1988; Fombrun & Shanley, 1990; Pfeffer, 1982; Porter, 1984; Weigelt & Camerer, 1988). The larger the firm, the greater the reputation (Fombrun & Shanley, 1990; Sobol & Farrelly, 1988), and thus the greater the pressure to respond. A competitive action directed toward a large firm generally receives wide industry publicity because such firms are associated with many stakeholders (Fombrun & Shanley, 1990; Pfeffer, 1982); thus, the marketplace is fully alerted to the challenge. If a large competitor feels that everyone is watching it being assaulted, it may be especially motivated to show that it is not passive. Few large firms can afford to ignore a direct and public competitive challenge. In some cases, the pres-

sure to respond—and to respond quickly—may even be so strong that the response decision may not make rational economic sense (Kreps, 1990; Porter, 1984; Weigelt & Camerer, 1988). Small firms, on the other hand, do not lose as much face or credibility if they abstain from responding to adversaries' actions.

Hypothesis 2a: Small firms will show a lower degree of responsiveness to competitive actions than their larger rivals.

Thus, as noted earlier, large firms may have less propensity for action but more propensity for response than small firms. Slack and inertia dampen the large firms' proactive actions, but the same slack and more important, the need to protect reputation, increase the likelihood—and, as argued below, the announcement speed—of response. When poked, the lion responds.

Response announcement speed. Both Schelling (1960) and Axelrod (1984) noted that speed of retaliation also has important signaling properties—the longer the delay between action and response, the dimmer the signal. Although common sense may suggest that small firms can maneuver and respond more quickly than large ones (Katz, 1970), the latter may be more strongly motivated to mobilize their extensive resources and to announce their response plans very quickly. To maintain reputation in the public's eyes, to show toughness, and even to prevent further attacks—by the attacker and other competitors—the defending large competitor will often feel obliged to retaliate quickly (Axelrod, 1984; Schelling, 1960). Finally, large firms will also be able to speed up the announcement process by offering a response drawn from the "pre-established routines" (Allison, 1971) that result from the bureaucracy common in large firms (Mintzberg, 1979).

Conversely, small firms will be more hesitant to make a mistake in announcing a response; they tend to be circumspect and "hold their fire" longer than large firms. Because of limited resources, they may have to be more selective in responding and more deliberate in making such decisions. Finally, the response announcements of small firms may have less deterrent impact than those of large firms, so the motivation to respond quickly is less than it is for the latter.

Hypothesis 2b: Small firms will be slower to announce responses than their larger rivals.

Response execution speed. Although they may be slower to announce responses, small firms should be able to execute their responses more quickly than larger firms, because of their flexibility. To maximize the impact of guerrilla counterattacks (Harrigan, 1985; MacMillan, 1980), small firms under attack will attempt to delay public revelation of their plans as long as possible and will then to execute responses very rapidly.

Conversely, the structural complexity and slower information processing of large firms impairs their execution speed (Galbraith, 1977;

Mintzberg, 1979). In addition, small firms are often niche players and thus need not offer responses affecting an industry's whole market; but large firms very often need to analyze and coordinate many markets and executive offices to implement an effective and coherent response (Porter, 1980).

Hypothesis 2c: Small firms will execute responses faster than their larger rivals.

Response visibility. Similar to Hypothesis 1c, the responses of small firms should be less visible than those of large firms. Strategically, the small firms also need to remain low-key or even secretive in counterattacking, even more so than when attacking, because of their overall objective of maximizing guerrilla effects.

Hypothesis 2d: The responses of small firms will be less visible than those of their larger rivals.

Implications for Performance

Our second major research issue concerns the implications of competitive behaviors for company performance. The findings from competitive interaction studies suggest that competitive actions and responses matter to performance: initiators of actions and early responders gain market share at the expense of late responders (Chen & MacMillan, 1992); the greater a firm's tendency to respond, the better its performance (Smith et al., 1991); and the more responses a firm's actions provoke, the worse its financial performance (Chen & Miller, 1994). However, the focus of these studies has been on the relationship between a strategic attribute and performance for firms in general, not for firms of different sizes.

Most of the early literature on competing from a small size or low-share position attempted to provide insights or prescriptions for performance (e.g., Hamermesh et al., 1978; Hofer, 1975; Woo, 1983). A consistent argument was that small and large firms each need different strategies to compete successfully in an industry (Hambrick et al., 1982; Woo & Cooper, 1981, 1982). However, the specific prescriptions set forth in the literature on strategies for low- and high-share positions vary widely and sometimes even conflict. For instance, Cooper and colleagues (1986) encouraged small competitors entering an industry to challenge their established opponents directly, but Katz proposed that "direct confrontation should be avoided" (1970: 364).

We could take the approach of making specific predictions for how each attribute is differentially associated with performance in small and large firms. It might be argued, for example, that to perform well, large firms have a greater need to be responsive to competitive attacks because of their stronger need to protect reputation. However, some behaviors may be universally beneficial for firms of all sizes: to be successful, both small and large firms may need to show a high degree of propensity for action. In short, prior guidance about how specific competitive behaviors are associated with performance is generally lacking or contradictory, and hypotheses so-based

would be very speculative. Thus, our interest in the performance implications must remain exploratory, posed as the following proposition: Competitive behaviors that contribute to favorable performance will differ for small and large firms.

RESEARCH METHODS

Sample

Data were gathered on the competitive moves of the 28 major airlines, those noted by the U.S. Department of Transportation as having annual operating revenues of \$100 million or more. Table 1 lists the studied airlines. All these moves were identified from scanning *Aviation Daily* between 1985 and 1986. The data used in this study are part of a larger set also used by Chen and MacMillan (1992) and Smith and colleagues (1991) and gathered over the post-deregulation years 1979-86. However, as discussed below, because the competitive behaviors of airlines were inconsistent during the first six years after deregulation, this study used only 1985 and 1986 data.

The research method used in collecting the data, which is similar to Miller and Friesen's (1977), has been labeled "structured content analysis" (Jauch, Osborn, & Martin, 1980). The method is unique in that actual competitive interactions of sample firms were directly identified from an extensive review of public information. A predesigned, structured coding schedule was used to perform the content analysis.

The industry was chosen not only because of its well-established competitiveness and distinct boundary, but also because a set of competitors was clearly identifiable and a rich source of public information was available. Because our hypotheses all pertain to business-level strategy, it was also appropriate that all airlines are single-business or dominant-business firms (Rumelt, 1974).

After surveying various publications, we concluded that *Aviation Daily*, a 50-year-old industry journal, offered the most complete and detailed information on airline competition. Because the journal aims at objectively reporting airlines' announcements and actions, post hoc rationalization of competitive moves and bias toward covering only certain airlines' activities were expected to be minimal.

A series of steps was taken to evaluate the coverage and the impact of this journal. First, to assess the general perception of *Aviation Daily* among key informants in the industry, the first author conducted an extensive survey of 57 senior airline executives and industry experts (consultants and analysts). The results indicated that the respondents considered *Aviation Daily* to be not only comprehensive and accurate but also a significant source of information for the airlines themselves. There were no significant differences in the response of the executives of small and large airlines (as defined under "Measurement"). More important, an analysis revealed that the amount of space *Aviation Daily* devoted to reporting competitive moves

TABLE 1
Airlines and Competitive Moves Studied^a

Airlines	Type of Move	Number
Small		
Air California	Price cut	72
	Promotion	38
Alaska	Service improvement	11
Aloha	New service	9
American West	Increase in commission rate for travel agents	5
Braniff	Feeder alliance with a commuter airline	15
Frontier	Cooperation with another major airline	11
Hawaiian	Merger and acquisition	15
Jet America	Co-promotion with non-airlines	16
Midway	Increase in daily departures	82
New York Air	Exit from a route	14
Ozark	Change in ticket purchase requirements	10
Pacific Southwest	Entry into a new route	12
People Express	Frequent flier programs	17
Southwest	Change in fare structure	57
Wein	Decrease in daily departures	5
World	Hub creation	7
Large	Total	396
American		
Continental		
Delta		
Eastern		
Northwest		
Pan Am		
Piedmont		
Republic		
TWA		
United		
U.S. Air		
Western		

^a The years studied in this research are 1985 and 1986. Some of the airlines no longer exist. There were 16 small and 12 large airlines in the sample.

was influenced mainly by a move's type than the size of the firms involved. There was thus no evidence to suggest that the journal was biased toward greater coverage of large airlines' competitive activities.

Identification of Actions and Responses

As noted earlier, a competitive move was defined as one that had the potential effect of enabling acquisition of rivals' market shares or reducing their anticipated returns. To identify such moves, we undertook an extensive review of every issue of *Aviation Daily* to discover all the competitive moves in this industry (cf. Levine, 1987): price cuts, promotional activities, market expansions, and so forth. It was essential for this study to distinguish the actions from the responses. To accomplish that, the first author identified all entries in *Aviation Daily* that were responses by searching for the

following key words: "in responding to," "following," "match," "under pressure of," and so on.³ The identification was straightforward and involved no significant degree of personal judgment.

Much care was taken in tracing streams of actions and responses back to initial actions. First, we read all *Aviation Daily* issues in chronological order to find all competitive moves. Second, using the above keywords, we first identified each response and then worked back to find the report of the initial action. By this method we were able to trace every initial action and all responses to it. All these moves ($N = 396$) were classified into 17 types to allow use of statistical controls for the types of moves taken. Table 1 also lists the types of moves studied.

Measurement

The unit of analysis was a firm's action and response behavior over a given year. Average annual company scores were calculated for each of the seven action and response attributes. Because for each measure we tried to use all pertinent data to control for moderating or intervening factors, the construction of the different measures varied. In addition, the measures used here, all indirect and based on public information, may only approximately capture the underlying constructs.

Propensity for action. We calculated this variable by dividing the total number of actions an airline initiated in a given year by its total number of routes in the same year. The control for scale of operation was necessary because airlines with many routes have more fronts on which to undertake actions.

Action execution speed. This was the average amount of time that a firm spent to execute an announced action. We first measured the time difference between the date the firm publicly announced or acknowledged the intended action, as reported in *Aviation Daily*, and the date that action began to be executed, as indicated in the journal.⁴ An action was excluded if its execution was later reported to have been canceled. Then, since the time required to execute different actions varies (for example, a price cut can be made much faster than a new hub can be created), we controlled for this effect in order to be able to compare the scores across all airlines. Thus, for

³ Similar competitive moves can be motivated by a common industry change rather than by other airlines. Thus, we supplemented the key word search method with a thorough reexamination of the entire database to ensure that the sample included only action-response pairs.

⁴ If no further report appeared in *Aviation Daily* indicating a change, the date of execution initially announced was assumed to be valid. Otherwise, we recalculated this measure, adjusting for the difference between the actual and the announced execution date. For a move like hub creation, the measure for this variable was the difference between the date of announcement and the date operation began, according to *Aviation Daily*. This calculation reflects delay in action execution better than speed of execution. To be in line with the underlying theoretical arguments and to keep our terms parallel, we took "speed" to be the opposite of "delay" and developed the measure accordingly. The same logic underlies the measure of response execution speed.

each of the 17 types of moves, execution time scores were standardized over all years and airlines to have a mean of 0 and a standard deviation of 1. A positive value thus meant that an airline took longer than average to execute that particular type of action. Then, to indicate speed rather than time lag, we reversed the signs so that a large value implies great speed. We took the average standardized score across all the actions taken by an airline in a given year as its action execution speed for that year.

Action visibility. This variable was defined as the average amount of information available about a competitive action that a firm initiated. We first counted the number of lines *Aviation Daily* devoted to reporting an action when the firm first made it public. Since the number of lines reporting an action differs for different types of moves, we used the same standardization by type of move and averaging process as was reported for the previous measure.

Responsiveness. Defined as a firm's relative tendency to respond when attacked, this measure was determined through a comparison of the difference between the actual response behavior of a firm under attack and the firm's predicted tendency to respond. Two steps were involved in calculating the latter. First, we needed to determine, in general, the likelihood that a given action would provide a response from any competitor. Prior research suggested three influences on the likelihood that an action will provoke a response: (1) the type of the action—for example, price changes are more likely to elicit response than new hubs (Chen et al., 1992), (2) the visibility of the action (Chen & Miller, 1994), and (3) the degree to which the affected competitor depends for revenues on the markets under attack (Chen & MacMillan, 1992).⁵ We performed logistic regression analysis, regressing response (coded 1 if the action provoked at least one response, 0 otherwise) on all these variables. The Appendix gives details and examples concerning this analysis. We then used the regression coefficients to construct a predicted likelihood of response for every competitor affected by an action.

Then, we calculated a firm's responsiveness rating for an action as the difference between the actual value of response (1, if the firm did respond; 0, otherwise) and the firm's predicted likelihood of response. A large positive rating indicated higher responsiveness. Finally, we averaged the ratings for all the incidents in which a firm was under attack in a given year to calculate a firm's overall responsiveness score for that year.

Response announcement speed. This variable was defined as the average amount of time it took a firm—relative to other responding competitors—to announce an intended response to an action. We first measured how long a responding airline took to announce a response to an action as the number of days between the action's announcement date and the date

⁵ Airlines affected by each action were first identified through *Aviation Daily* for those providing service in at least one of the 37 "large air traffic hubs" affected by the action. An airline's dependence on affected airports was measured as the percentage of all passengers served by the airline in the year an action was taken affected by the action.

the responding airline publicly announced or acknowledged its intended response, as reported in *Aviation Daily*. As noted, a response was excluded if its execution was later reported to have been canceled. To construct this measure of relative speed, we then divided each firm's response announcement time by the response announcement time of the fastest other competitor responding to the same action. Thus, only cases with more than one response were used in constructing this variable. So, if an airline was the first to respond to an action, we divided its response announcement time by that of the second-fastest responder to the same action; in this case, the ratio would be less than 1. Conversely, if a firm was not the first responder, its response announcement time was divided by that of the first responder, and the ratio would thus be greater than 1. We then used the average of all the responses taken by an airline in a given year as its response announcement time and inverted the scores so that large values implied greater speed.

The following examples demonstrate this measure: If airline A responded to an action two days after it was announced, but the next responder, airline B, responded six days after the action was announced, airline A received a rating of 2/6, which, inverted to connote speed, equals 3.0. Airline B would have had a rating of 6/2, inverted to .33. Let's say instead that A responded two days after the action and B, ten days after. Our measure acknowledges the differential, and A is seen as even speedier (and B as even slower) than in the prior case. This measure, based on the concept of competitive relativity, is a direct variation of the Boston Consulting Group's (1974) seminal expression of relative market share as the size of a focal firm divided by the share of the biggest other firm in the industry.

Response execution speed. This variable, defined as the average amount of time that a firm spent to execute a response, was measured the same way as action execution time. However, response execution time not only varies with the type of initial action but also with its execution time. Complex, time-consuming actions, for example, tend to evoke complex, time-consuming responses. To control for these effects, we first regressed response execution time on type of action and action execution time for all years and airlines.⁶ The resulting residual indicated how much an airline's rating differed from the value we predicted on the basis of the action's type and execution time. We then used the average residual of all an airline's responses in a given year as that airline's response execution time for that year. We reversed the signs of these scores so that a large value implied greater speed.

Response visibility. This variable was defined as the average amount of information available about a response and was measured by the number of lines *Aviation Daily* devoted to reporting this response. Like response exe-

⁶ Ordinary-least-squares (OLS) regression was used. In constructing response execution speed and response visibility, we used the full sample of 418 responses from the eight-year database. The resulting 1985-86 scores were then used as the measure in this study.

cution speed, the visibility of a response is affected by both the type and the visibility of the initial action. Thus, to control for these effects and to capture the extent to which a firm's rating differed from the value predicted on the basis of the action's type and visibility, we used the same process as we did for response execution speed.

Organizational performance. Because of the general desirability of assessing performance with a multidimensional measure (Dess & Davis, 1984; Hambrick, 1983; Venkatraman & Ramanujam, 1986), the high interrelationships between the individual measures, and the similarity of the results obtained from using each of these measures, we assessed organizational performance using an index composed of two market-related and two profit-related performance measures: (1) Net market share change (in share points) and percentage market share change (net market share change/initial market share) were measured for the airports an airline served—not for the whole U.S. industry—for each year. (2) Profit margin (operating profit/operating revenue) and total operating profit per revenue passenger mile (RPM) were also assessed.

We first performed a factor analysis of these four performance measures, choosing a one-factor solution on the basis of the scree test and the traditional eigenvalue cutoff criterion of 1.0. This factor accounted for 55.9 percent of the variance in the performance data and had an eigenvalue of 2.24. The loadings for the variables were as follows: .69 for net market share change, .81 for percentage market share change, .78 for profit margin, and .69 for operating profit/RPM. The Cronbach's alpha for these four measures was .79, with no difference between large and small airlines, which is above the minimum threshold of .70 recommended by Nunnally (1978). We then used the factor scores as airlines' performance indexes in the final analysis.

Organizational size: Large versus small. We used the Department of Transportation's dichotomous classification, which has been widely used as a key demarcation in airline industry research (Bailey, Graham, & Kaplan, 1985; Levine, 1987). Large airlines, or majors, were carriers with annual operating revenues of \$1 billion or more, and small airlines, or nationals, were those with annual operating revenues of between \$100 million and \$1 billion. Our sample contained 16 small airlines and 12 large ones (see Table 1). The mean operating revenues in 1985–86 for the 16 small airlines was \$333 million (s.d. = 204), and it was \$2,591 million (s.d. = 1,705) for the 12 large airlines, indicating that the two size categories differed widely.⁷

Consistency Check in Annual Aggregation

Because the action and response attributes were aggregates, the extent to which the average score for a given attribute across all actions or responses represented a firm's behavior for an entire year was a concern. As Miller and

⁷ The difference of the within-group variance in size for these two groups is not significant in either a Cochran's C or a Bartlett-Box F test.

Friesen (1984), among others, have noted, it is legitimate to describe a firm as having a characteristic only if it consistently exhibits that characteristic.

To check for the internal consistency of the airlines' moves for each attribute, we examined the intraclass correlation coefficients (ICCs) for each of the seven attributes in each year. Shrout and Fleiss described several types of ICCs; we used ICC (1,1), which applies to cases in which "each target [here, an airline] is rated by a different set of k judges [moves]" (1979: 421), because the number of competitive moves initiated by an airline in a year is not a constant. The ICC scores were all significant at the .05 level or better for all the attributes. Moreover, the ICCs were somewhat stronger for the 1985-86 two-year averages than for the two one-year periods separately, probably because of the increased number of actions and responses available for measure over the two-year period.⁸ These results thus support aggregation and explain this study's use of only 1985-86 data derived from the more comprehensive eight-year database.

Analysis

As noted above, the construction of the seven action and response variables required various transformations and adjustments, making the eventual scales far removed from the original data and hence difficult to interpret. To resolve this problem, once we finished all the data transformations, we standardized all the variables for the two-year averages so that each had a mean of 0 and a standard deviation of 1.

A series of *t*-tests and a multivariate analysis of variance (MANOVA), were performed so that we could examine the differences between small and large airlines for each of the seven attributes. We used correlational analysis to examine performance implications.

RESULTS

Table 2 gives correlations for the action and response variables, organizational size, and performance.

Descriptive Differences in Action and Response Behaviors

Table 3 presents the means, standard deviations, and results of the MANOVA and *t*-tests for the three action attributes and four response attributes.

As mentioned above, all the variables were standardized to have a mean of 0 and a standard deviation of 1. Thus, for example, Table 3 indicates that small airlines' mean propensity for action is .40 (standard deviations) above the average of all the airlines, and the large airlines' mean propensity is -.47 below the overall average. The MANOVA result in the table revealed a sig-

⁸ Paired *t*-tests did not indicate any significant difference on the whole between these two years of data for the attributes examined, which lends further support for the use of the two-year averages.

TABLE 2
Pearson Correlation Coefficients^a

Variables	1	2	3	4	5	6	7	8
1. Propensity for action								
2. Action execution speed		-.22						
3. Action visibility	-.18		-.19					
4. Responsiveness	-.04		-.28	-.21				
5. Response announcement speed		-.29		-.60*	.26	.11		
6. Response execution speed		-.24		.20	-.06	.35	.20	
7. Response visibility		.48*		-.60*	.11	-.33	-.38†	-.38†
8. Performance index		-.25		-.35*	.07	.05	.44†	-.25
9. Organizational size								
Industry classification		-.44**		-.36*	.34*	.35*	.48*	-.06
Operating revenues		-.35*		-.34*	.42*	.32*	.37*	.06

^a N = 28 for all variables except 5, 6, and 7 (N = 16), since some airlines had zero responses.

† p < .10

* p < .05

** p < .01

nificant group effect ($p < .05$), indicating that the scores for the action and response attributes, as a whole set, differ for the small and large airlines.

The t-tests of each of the seven attributes indicated that the small and large airlines differed significantly ($p < .05$) across all but one attribute—response execution speed (Hypothesis 2c).⁹ All three hypotheses regarding differences in action attributes were supported: small airlines were found to have a greater propensity for action (Hypothesis 1a), faster action execution (Hypothesis 1b), and less action visibility (Hypothesis 1c) than their larger rivals.

There was also general support for the hypotheses predicting differences in response attributes: small airlines were less responsive to competitive attacks (Hypothesis 2a) and responded more slowly to announcements

⁹ Mann-Whitney tests (Gibbons, 1993) were also conducted, and the results were almost identical to those of the t-tests. The only exception, probably a result of low power, is response announcement speed, where the t-test was significant but the Mann-Whitney was not.

TABLE 3
Descriptive Differences of Competitive Behaviors

Variables	Small Airlines		Large Airlines		<i>t</i>
	Means	s.d. ^c	Means	s.d.	
Action attributes					
Propensity for action	.40	1.20 ^d	-.47	0.22 ^e	2.48**
Action execution speed ^a	.32	0.93	-.38	0.99	1.87*
Action visibility	-.31	0.96	.37	1.00	1.80*
Response attributes					
Responsiveness	-.28	1.22 ^d	.42	0.43 ^e	-1.90*
Response announcement speed ^{a,b}	-.83	2.05 ^d	.25	0.32 ^e	-1.79*
Response execution speed ^{a,b}	.07	0.68	-.04	1.18	0.19
Response visibility ^b	.70	1.23 ^d	-.42	0.55 ^e	2.53**
F	13.83*				

^a As indicated in the measurement section, the signs of the three variables involving speed were reversed to reflect speed rather than time lag.

^b For these attributes, *N* = 6 for small airlines and 10 for large ones, since some airlines had zero responses.

^c The superscripts "d" and "e" indicate significant differences in variances, or standard deviation as reported, in which the score marked "d" is significantly greater than its counterpart marked "e," in both Cochran's C and Bartlett-Box F tests. Thus, the table indicates that the standard deviation of four attributes for small airlines is significantly greater than that of the large ones. Except for response visibility, which is significant at the .05 level, all others are significant at the .001 level.

* *p* < .05

** *p* < .01

*** *p* < .001

of actions (Hypothesis 2b) than larger firms. However, contrary to Hypothesis 2d, the responses of small airlines were more visible than those of larger airlines. One possible explanation for this surprising result is that large firms are expected to respond when attacked (Hypothesis 2a), and they may not feel any special need to make their responses visible when they do so. In contrast, when small firms retaliate, they may decide to amplify their responses publicly to maximize the impact.

In sum, the small and large airlines differed widely and extensively in their approaches to competitive interaction.

Competitive Behavior and Performance

As the correlations in Table 2 indicate, two competitive attributes, action execution speed and response announcement speed, were significantly associated with performance for the sample. These results, which may reveal general prescriptions for all airlines, may also be masking critical differences between large and small airlines, our primary focus. The first, and perhaps most natural, step toward finding those differences was to examine the correlations for the two subsamples to find marginal differences between the large and small groups by testing for differences in correlations and for interactions in moderated regression. No single attribute's correlation with

performance was consistently significant, either positive or negative, for both size groups; thus, no universal performance implications emerged.

However, another approach with roots in institutional theory recommended itself (Abrahamson & Rosenkopf, 1993; DiMaggio & Powell, 1983; Oliver, 1991; Tolbert & Zucker, 1983; Zucker, 1987). Instead of expecting linear relationships between strategic attributes and performance (i.e., "more of X is better"), one might more reasonably expect that firms generally strive to behave optimally, that in fact their average behavior is optimal, and that deviations from group norms—in any direction—yield inferior performance (DiMaggio & Powell, 1983). The question then becomes, To what extent does a firm's deviation from, or conformity to, the norm for its size group affect its performance? From an institutional point of view, a firm's high performance may come from its adherence to the norm of its size group. For example, there may be an optimal and legitimate competitive profile for small (or large) airlines, and deviations from it may lead to poor performance. In contrast, strategy scholars who have advocated the advantages of differentiation (e.g., Porter, 1980, 1985; Prahalad & Hamel, 1990) might argue for the opposite: to conform is to be "stuck in the middle"; it is better to have some extreme distinguishing characteristics.

To test the performance implications of deviating from the typical competitive behavior of a size group, we took the mean of a group (as reported in Table 3) as its typical behavior. A firm's deviation on an attribute was then calculated as the absolute distance between its own behavior and the average behavior for its group. We then examined the correlations between the deviation ratings and the performance index for each attribute for each group. Table 4 provides correlations only for the four attributes for which we have information on all 28 airlines studied. (Since some airlines had no responses, we have only 16 observations for three response attributes.) Six of the eight correlations in Table 4 are negative, three significantly so at the .05 level. The results suggest that deviation from typical action execution speed was most detrimental to the small airlines and that deviation from typical levels of propensity for action and responsiveness was most harmful for the large airlines.

In addition, we also calculated the deviation as the Euclidian distance between a firm's overall profile on all four attributes and the average subsample profile and correlated it with the performance index. The correlation was $-.35$ ($N = 28$, $p < .05$). These results indicate that, in general, deviation from a group norm hurts performance. The implications seem to be that to perform well, small and large airlines should follow typical behavior for their groups and that failure to do so will erode performance.

DISCUSSION

This study examined how the competitive behaviors of the small firms in an industry differed from those of their larger rivals, and the performance implications of those competitive behaviors. A primary conclusion is that

TABLE 4
**Correlational Analysis: Deviation from the Subgroup Average
 and Performance^a**

Competitive Attributes	Small Airlines	Large Airlines
Propensity for action	-.11	-.55*
Action execution speed	-.61**	-.10
Action visibility	.16	-.19
Responsiveness	.33	-.58*

* The table reports only those attributes for which we had observations for all 28 airlines. The statistics reported here are Pearson correlation coefficients for the performance index and deviation, measured as the absolute distance from the group mean. The results are almost identical if the group median is used.

* p < .05

** p < .01

small firms do differ descriptively from their larger counterparts in terms of competitive behaviors.

Descriptive Tendencies

As was expected, the small firms tended to be more active than the large ones in initiating competitive moves. This finding supports the normative suggestion that small firms should attempt to "retain the competitive initiative" by engaging in competitive attacks (MacMillan, 1980). It is also in line with the theoretical argument that size may breed complacency and inertia (Halberstam, 1986), insularity (March, 1981), and resistance to adaptation (Aldrich & Auster, 1986). In contrast, the large firms seemed to be more responsive when attacked. This difference in response behavior—a rather interesting contrast in light of the finding for action propensity—is perhaps due to large firms' greater need to protect their reputations (Fombrun & Shanley, 1990; Weigelt & Camerer, 1988).¹⁰

With respect to speed, another interesting pattern emerges. As predicted, smaller firms were faster implementors of the competitive actions they initiated. This finding is consistent with the flexibility and rapidity commonly ascribed to small firms (Fiegenbaum & Karnani, 1991; MacMillan, 1980) and with the liability large firms suffer as a result of their structural complexity, bureaucracy (Mintzberg, 1979), and unwieldy information-processing systems (Galbraith, 1977). Since the measure gauged the

¹⁰ A generally accepted argument is that large firms have more slack resources than small ones. However, given the severe financial difficulties several large airlines encountered in the mid-1980s, this premise may not hold. To test for this possibility, we developed for each airline a slack index, taking the average of the two kinds of slack Smith and colleagues (1991) used: absorbed slack ("the amount of selling, general, and administrative expenses divided by total revenues") and unabsorbed slack ("the extent to which current liabilities covered the sum of cash and marketable securities"). No significant difference between large and small airlines on this slack index emerged.

gap between announcement and execution, this finding may also indicate that small firms delay their announcements as long as possible, even until well after they have started implementation.

The speed of small firms in executing actions seemed to be countered by the large firms' speed in announcing responses. The tendency of large firms to announce their responses quickly may reflect their stronger needs to protect reputation (Fombrun & Shanley, 1990), to clearly signal stakeholders (Pfeffer, 1982) and competitors (Axelrod, 1984; Schelling, 1960) that they are not passive, and to prevent further attacks (Chen & MacMillan, 1992). This finding runs counter to Katz's (1970) proposition that small firms will respond more quickly than large ones.

As for action visibility, the results were consistent with the prediction that small firms are likely to be low-key and even secretive. This finding supports Katz's (1970) and MacMillan's (1980) suggestions that small firms be as inconspicuous and guerrilla-like as possible. However, contrary to expectations, the responses of the small firms were more visible than those of their larger rivals. It would seem that large firms register their responses in unvarnished, matter-of-fact terms, whereas small firms try to enhance the visibility of their responses as a way of showing their assertiveness.

When the findings on response announcement speed and visibility are taken together, it appears that small airlines tend to hold their fire, calculating well-developed, visible responses; large airlines act quickly but in rather straightforward, unexciting ways.

Prescriptive Tendencies

Our second major avenue of inquiry, though only preliminary and suggestive, focused on the performance implications of competitive behaviors for the large and small firms in an industry.

At a general level, our results highlight the relevance of industry norms to strategic thinking. Institutional theorists have long appreciated the importance of industry conventions and the salutary effects of appearing and acting normal within a competitive field (DiMaggio & Powell, 1983; Meyer & Rowan, 1977). Stakeholders seek assurances that they are dealing with a reliable firm, and adherence to central industry tendencies is a convenient, powerful test of such reliability (Hambrick & D'Aveni, 1992).

However, it may not be at the overall industry level that norms are established, but rather at the subgroup or subclass level. In this vein, Hambrick, Geletkanycz, and Fredrickson (1993) found evidence that executives with long tenure in an industry come to adhere psychologically to the industry's "recipes" for success (Spender, 1989); these researchers acknowledged that different classes of firms in the industry should follow different approaches. As they stated, "Industry wisdom may accumulate about the ideal profiles of different sub-classes of firms within the industry (e.g., regional airlines, money-center retail banks, large ethical pharmaceutical firms), such that their chosen strategies are largely 'scripts' for their widely-accepted roles in the industry" (1993: 413).

Our results provide preliminary support for applying the logic of institutional theory to the study of interfirm competition. In particular, we found that both small and large airlines performed better to the degree that their competitive behaviors resembled those of the average, or typical, small and large airline. And particular behaviors seemed to distinguish the high and low performers in both size groups: For large airlines, it seemed to be critical to conform to the typical propensity for both action and responsiveness, and for small airlines, it appeared to be most crucial to stay close to the typical action execution speed.

If we assume that small firms generally face severe problems of legitimacy (Aldrich & Auster, 1986; Meyer & Zucker, 1989), it makes sense that they must go to lengths to appear reliable and normal; engaging in competition that conforms to the average behaviors of small airlines is a way to achieve that appearance. It is also possible that the typical behavior of small airlines indeed represents an ideal, deviations from which amount to strategic mistakes.

Large firms, conversely, do not face problems of legitimacy: they are well established and usually have significant resources and track records. However, their size attracts wide attention from a great variety of stakeholders. To maintain the confidence and support of stakeholders and the respect of competitors, a large firm is also well advised not to engage in unconventional competitive behavior. Acting in extreme or deviant ways may alienate stakeholders and send signals of weakness or confusion to competitors; thus, a large firm does best to conform to the standard profile of large firms.

It is important to note, in the context of the airline industry, that the 1985–86 period that we studied was several years after the initiation of airline deregulation in 1978. Enough time had passed for norms and conventions to develop and firms may have begun to comprehend the optimal behaviors for their size group (DiMaggio & Powell, 1983; Spender, 1989).

Although firms benefit from adhering to group norms, they may have a natural inclination to compete in innovative ways by deviating from those norms. The behaviors of small firms in particular are more varied than those of large firms, as evidenced by the significantly larger standard deviations indicated in Table 3 with the superscripts "d" and "e." This finding suggests that, descriptively, small firms tend to be more varied; yet prescriptively, they generally benefit (as do large firms) from staying close to the average for their size group. This very provocative finding, though preliminary, suggests that small firms would benefit from conforming rather than from following inclinations to deviate. We cannot begin to do justice to an exploration of this paradox, but we can say emphatically that theory and research on competitive conformity—its causes and effects—should be a high priority for the field of strategy.

Of course, causality could be the opposite of what we have asserted. It may be that performance triggers certain kinds of competitive tendencies, rather than the reverse. If so, the phenomena are similarly intriguing. For instance, it may be that small (or large) firms that are doing badly are in-

clined to engage in extreme, deviant behavior but that those performing well tend to engage in risk-averse conformist behavior (Bowman, 1982; Hambrick & D'Aveni, 1992). This explanation is generally in line with prospect theory, whose proponents (Fiegenbaum & Thomas, 1988; Kahneman & Tversky, 1979) argue that when returns have been below target, most decision makers are risk-seeking, and that when returns have been above target, most are risk-averse. Unfortunately, we did not have a large enough sample or a long enough time frame to be able to disentangle the causality of our observed associations.

Limitations and Future Directions

This study was constrained by the small number of airlines used. Even though this research included all major airlines active in the industry during the research period (except regional and commuter airlines, for which competitive data are very sparse), the number of data points (especially for response attributes) was not generous and restricted the choice of analytical methods and the statistical significance of the research findings. This constraint is, of course, common to most single-industry studies (Cool & Schendel, 1987; Fiegenbaum & Thomas, 1990; Hatten, Schendel, & Cooper, 1978).

Second, the measures used here are all indirect and based on industry press and public information. Because of this constraint, the measures and their corresponding labels may not fully capture the phenomena that we intended to investigate. For instance, our measures of action and response execution speed may not correspond perfectly to the ideas that we intended to study because we lacked internal information and company cooperation; with our data, we could not gauge the actual amount of time firms took to execute actions and responses, although we believed our measures to be generally accurate surrogates.

Similarly, the primary information from which the measures were developed was derived mainly from the airline press. Like most research using secondary data, this study may not be immune from reporting bias with respect to focus, company, and event, however credible and objective the data source seems to be.

Future research could make several extensions of the present work. First, the findings suggest that different forces drive action and response behaviors, so different theories may be needed to explain each. Second, our main interest was the effect of a firm's size on its competitive behaviors; a more complex analysis could study the interactive effects of the sizes of the attacking and targeted competitors. Finally, it has been traditional to expect a linear relationship between a given strategy construct and performance. The finding that deviation in either direction from the group norm may hurt performance seems to suggest a new institutional conceptualization of performance, with important roles for industry and group central tendencies. Such a new framework could entail radical new thinking about such concepts as strategic differentiation and being "stuck in the middle" (Porter, 1980).

In summary, this article is one of the few systematic studies of the differences in the actual competitive behaviors of the large and small competitors in an industry, as well as their performance implications. The research highlights the significance of organizational size in shaping competitive dynamics, indicating a need and an opportunity for much more research on this important strategy topic.

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APPENDIX Measure for Responsiveness

Step 1. To examine the likelihood that an action would provoke a response from any competitor, we performed logistic regression analysis, regressing response (1, if the action provoked at least one response, 0, otherwise) on the following variables: (1) type of action (a 0/1 categorical variable for each of the 17 action types), (2) action visibility (number of lines reporting the action in *Aviation Daily*), and (3) the average percentage of passengers involved for all the airlines at the airports affected by the action (see footnote 5 for the measure). In performing the regression analysis and constructing this variable, we used the full sample of 1,027 actions from the eight-year database. We then used the resulting 1985-86 responsiveness scores (see step 4 below) as the measure in this study.

Step 2. To construct the predicted likelihood that a given firm affected by an action would respond to it, we used the coefficients from the above regression analysis and the firm's percentage of passengers affected.

Step 3. A firm's responsiveness rating for an action was calculated as the difference between the actual value of response (1, if the firm did respond, 0, otherwise) and the firm's predicted likelihood of response. A positive value would indicate that the firm was "excessively" responsive to the attack.

For instance, assume the action is a price cut (so the value is 1 for price cut and 0 for all other types of actions), there were 20 lines in *Aviation Daily* reporting the action, 30 percent of the airline's passengers were affected, and the firm did respond. The firm's responsiveness rating for this particular action is then $1 - .75 = .25$, where .75 is the predicted likelihood of response obtained from step 2, given the values of the three predictive variables.

Step 4. We then averaged the results for all the incidents in which the firm was under attack in a given year to calculate overall responsiveness index for that year.

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EFFECTS OF COACTION, EXPECTED EVALUATION, AND GOAL SETTING ON CREATIVITY AND PRODUCTIVITY

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Social and contextual factors have been theorized to significantly influence creative performance. This research examined effects of three factors on individual creativity and productivity: coaction, expected evaluation, and goal setting. Study 1 indicated that high levels of creativity occurred when individuals worked alone, and productivity was high when they worked alone under no expectation of evaluation. Study 2 found the highest creativity occurred when individuals had a creativity goal and worked alone under expected evaluation. Productivity was low when people worked alone or were assigned a creativity goal. Implications of these results for models of creativity and managing creativity at work are discussed.

Creativity is often considered an important source of competitive strength for organizations. Organizational scholars and the business community have become increasingly concerned with enhancing individual creativity, since it is the foundation of organizations' creative and innovative potential (Amabile, 1988; Galbraith, 1982; Woodman, Sawyer, & Griffin, 1993). Various theories have been proposed and various empirical approaches taken in studying individual creativity. These include identifying personality characteristics associated with creative behavior (e.g., Barron, 1965; Barron & Harrington, 1981; Singh, 1986), examining environmental conditions, both social and contextual, that affect creativity (e.g., Amabile, 1983; Cummings, 1965; Shalley, 1991), and delineating an interactionist model in which creative behavior results from a complex person-situation interaction (e.g., Woodman & Schoenfeldt, 1990). This study focused on examining three environmental factors that are theorized to affect the occurrence of creative behavior: working in the presence of coactors, expecting evaluation, and receiving a creativity goal.

Creative behavior is defined as behavior that results in identifying original and better ways to accomplish some purpose (Amabile, 1983; Shalley, 1991; Simon, 1985). In the research reported here, I defined individual cre-

I thank Terri Griffith, Carol Kulik, Gregory Northcraft, and two anonymous reviewers for this journal for providing helpful comments on earlier drafts of this article. This research was conducted while I was on the faculty at the University of Arizona.

ative behavior as developing solutions to job-related problems that are judged as both novel and appropriate for the situation (Simon, 1985; Shalley, 1991). Researchers have hypothesized a rich variety of conditions as necessary for creative behavior (e.g., Amabile, 1988; Woodman & Schoenfeldt, 1990) and suggested three conditions in particular as important for creative behavior at work: ability, intrinsic motivation, and certain cognitive activities (Amabile, 1983, 1988; Rokeach, 1965; Shalley, 1991; Simon, 1985). Ability is knowledge of the area in which an individual is working and the skills necessary to process information creatively to produce novel and appropriate responses. Creative ability involves combining known but previously unrelated facts and ideas in such a way that new ones emerge. In this research, ability was statistically controlled through random assignment rather than directly addressed since previous research (Basudur, Wakabayashi, & Graen, 1990) has demonstrated that ability is important to creativity and can be enhanced through creativity-related training. Therefore, this research focused on contextual and social factors that may affect creativity through their effects on intrinsic motivation and engagement in necessary cognitive activities.

Intrinsic motivation is inner-directed interest in a task. In order to be creative, individuals have to be both interested in the issue or problem to be addressed and motivated to find a solution. Since creativity requires a great deal of mental activity, individuals need to be motivated to work hard to achieve breakthroughs. Research has found that R&D professionals believe that intrinsic motivation is critical for creativity (e.g., Amabile & Gryskiewicz, 1987; Smeltz & Cross, 1984), and creative performance has been found to be positively correlated with intrinsic motivation to engage in a task (Amabile, 1979). According to cognitive evaluation theory (Deci & Ryan, 1980), the presence of salient extrinsic constraints on performance shifts an individual's perceived locus of causality from an internal to an external one, so task engagement is perceived primarily as a means of achieving an extrinsic end. This means-end relation between the task and constraint undermines intrinsic motivation. Creative performance is also undermined since high intrinsic motivation is necessary for creativity (Amabile, 1979, 1983, 1988). Thus, any social or contextual factor that diverts attention from the task itself should detrimentally affect creativity. But when individuals are free to focus on task activities, they are more likely to be creative.

Finally, engagement in certain cognitive activities, such as problem definition, environmental scanning, data gathering, and generation of alternatives, is necessary for creative responses to emerge (Rokeach, 1965; Shalley, 1991). It is key for successful cognitive engagement that individuals' attention and effort be focused on all relevant things in their environment. With such a focus, a number of solution pathways that could be helpful in solving problems creatively can be activated. In order to be creative, individuals need to cognitively search knowledge states to find a sequence of operations that will help achieve desired responses. If cognitive processing is dis-

rupted, creativity will suffer because critical information will not have been accessed or used in problem solving.

Prior research (e.g., Amabile, 1983; Shalley, 1991) has found that such variables as goal setting, rewards, and choice or personal discretion in work procedures can affect creativity. The current research investigated the independent and joint effects of the presence of coactors—others working independently on the same task as a focal person—the expectation of evaluation, and the assignment of a creativity goal on individual creativity and productivity on job-related problems. These variables were chosen for study both because of their theoretical importance and their pervasive presence in organizations. For example, goal setting is used widely in organizations (Locke & Latham, 1990). However, little research has systematically examined the effects of creativity goals on creativity or productivity. Similarly, external evaluation is an integral part of any job, so it is important to examine its impact on different types of work performance. Finally, employees are increasingly working in open offices in which their work stations are in view of others' work stations (Oldham, 1988). Although open office designs have been promoted as facilitating interactions among employees, research findings indicate that employees in open offices experience increased noise and distractions and decreases in satisfaction and motivation (e.g., Oldham & Brass, 1979). Therefore, it is important to determine how working in the presence of others, as in an open design, affects various performance outcomes.

Prior research (e.g., Amabile, 1979, 1983; Amabile, Goldfarb, & Brackfield, 1990; Matlin & Zajonc, 1968; Shalley, 1991) has suggested that each of these factors may have an independent impact on creativity. No research has examined how working in the presence of others interacts with expected evaluation and creativity goal setting to affect individuals' creativity and productivity. Furthermore, there are inconsistencies in the results of the few studies that have examined the effects of the presence of others on creativity. For example, Amabile and her colleagues (1990) examined the effects of coaction and audience surveillance on creativity and found no effect for coaction and a nonsignificant, negative effect for surveillance. Conversely, Matlin and Zajonc (1968) found that surveillance had a significant, negative effect on originality, which is an important component of creativity. Given that these are key social and contextual variables that should influence individuals' creativity by affecting their intrinsic motivation and engagement in the cognitive stages, the inconsistencies in past findings and relative lack of research in this area on the whole indicate that it is important to study these issues further. Results of the present research should contribute to a model delineating how contextual and social factors affect creative performance. If specific environmental factors that enhance or stifle individuals' creative ability can be identified, it may be possible to structure organizational environments to be more conducive to creativity. The creative behaviors thus increased should contribute to the long-term productivity and innovativeness of organizations (Galbraith, 1982).

EFFECTS OF COACTORS, EXPECTED EVALUATION, AND GOAL SETTING

Social facilitation and impairment are effects on individuals' behavior caused by the presence of others (Guerin, 1986). According to Zajonc (1965), audiences and coactors increase "drive/arousal," which facilitates simple, well-learned, dominant responses but impairs complex, counterinstinctual, subordinate responses. Most research conducted in this area has supported the social facilitation/impairment effect of the presence of others and has found that this effect can occur even when the others are nonevaluative and noncompetitive (Baron, 1986). However, less research has examined whether the presence of others has a social facilitation/impairment effect on creative behavior. Moreover, as previously mentioned, the results of research conducted in this area (Amabile et al., 1990; Matlin & Zajonc, 1968) remain inconclusive. Since working in the presence of coactors is a contextual factor that theoretically would be expected to affect individuals' work performance by influencing effective cognitive processing, further research is needed to examine whether the presence of coactors impairs creativity.

According to the distraction/conflict theory of social facilitation (Baron, 1986), the presence of others can serve as a distraction and can either energize people or disrupt their performance, depending upon whether their attention is focused on dominant or subordinate responses. Distraction can lead to attentional conflict, which may mediate social facilitation effects by increasing drive and causing attentional overload (Baron, 1986). Attentional overload leads to a restriction in cognitive focusing, causing an individual to attend to cues that are central to a task and to ignore peripheral cues. Additionally, Baron (1986) suggested that attentional overload may cause individuals to rely on cognitive shortcuts, such as heuristics and preexisting schemata, to avoid taxing their attentional capacity. Attentional overload may, therefore, be dysfunctional for creativity, given the cognitive activities proposed to be necessary for creative behavior. To be creative, people need to explore a number of possible solutions before choosing the solution deemed highest in novelty and appropriateness. Therefore, individuals must attend to a wide range of environmental stimuli in attempting to activate different knowledge structures. Thus, I posited that the presence of coactors would have a social impairment effect on individual creative performance by disrupting individuals' cognitive processing.

Hypothesis 1: Individuals working alone on an open-ended, ill-structured task will have higher levels of creativity than individuals working in the presence of coactors.

Furthermore, given the results of prior research (Baron, 1986), I expected that the presence of coactors would also impede individuals' productivity since the task studied here was complex-heuristic (Shalley, 1991). Complex-heuristic tasks are open-ended and ill-structured, and lack a clear, straightforward path to a solution (Amabile, 1983; McGraw, 1978). Prior

research has indicated that the presence of coactors leads to an increase in the speed and accuracy with which simple tasks are performed and to a decline in performance on complex tasks (e.g., Bond & Titus, 1983). Therefore, I expected that on this task the presence of coactors would impair productivity.

Hypothesis 2: Individuals working alone on a complex-heuristic task will have higher levels of productivity than individuals working in the presence of coactors.

The current research also examined the effects of the expectation of evaluation and the absence of that expectation on creativity and productivity. Research has suggested that expecting evaluation can have dysfunctional consequences for intrinsic motivation and creativity (Amabile, 1979; Amabile et al., 1990; Shalley & Oldham, 1985).¹ For example, Amabile (1979) found that individuals who expected their task performance to be evaluated exhibited lower intrinsic motivation than those who did not expect evaluation. This result may have occurred because expected evaluation undermined intrinsic motivation by focusing individuals on an extrinsic reason for engaging in the task (to receive a positive evaluation) rather than an intrinsic reason (enjoyment of the task). Moreover, in two studies Amabile (1979, 1983) found that individuals who expected an external evaluation had significantly lower levels of creativity on artistic tasks than individuals under nonevaluation. These results suggest that expected evaluation may adversely affect creativity by negatively affecting intrinsic motivation. Additionally, expected evaluation may have a detrimental effect on creativity through its effect on engagement in the cognitive activities. Apprehension about evaluation could divert attention away from a task itself and from task-relevant aspects of the environment, which would be dysfunctional for cognitive processing. Also, individuals may become reluctant to take risks since those risks may be negatively evaluated. Theorists (e.g., Amabile, 1983) have suggested that in order to be creative, individuals need freedom to take risks, play with ideas, and expand the range of considerations and material from which a solution can emerge.

Hypothesis 3: Individuals who expect their performance on a complex-heuristic task to be evaluated will have lower creativity than those not expecting an evaluation.

A number of studies have found that individuals have higher productivity when they expect an evaluation (e.g., Jackson & Zedeck, 1982; Shalley, Oldham, & Porac, 1987), and other research has found evaluation to have a neutral (Shalley & Oldham, 1985) or a negative (Jackson & Zedeck, 1982)

¹ Some research has found that competition or competitive evaluation can increase creativity (Raina, 1968; Torrance, 1965). Since the present study was not concerned with the effects of direct competition with others, the expectation of evaluation was not expected to boost creativity.

effect on productivity. Since most studies in this area have looked at productivity levels for performance on fairly simple, routine tasks rather than on complex-heuristic tasks, it is not clear that individuals will have higher levels of productivity on complex-heuristic tasks when they expect external evaluation. Generally, complex tasks require more attention and effort than simple tasks. With complex-heuristic tasks, simply working harder does not necessarily improve performance if effective cognitive processing does not occur (Locke & Latham, 1990). Research has indicated that as tasks increase in complexity, cognitive limitations may arise, so that increased motivation is less critical for performance than developing plans and strategies that might enhance effective performance (Earley & Shalley, 1991; Locke & Latham, 1990). Therefore, although the expectation of evaluation may motivate individuals to try to generate more solutions, it may also disrupt cognitive processing and cause them to choose inappropriate task strategies in an effort to be productive. Thus, I posited that individuals who expected their performance to be evaluated would have lower productivity on the task studied here than those who did not expect evaluation.

Hypothesis 4: Individuals who expect their performance on a complex-heuristic task to be evaluated will have lower productivity than those not expecting an evaluation.

A great deal of laboratory and field research has been conducted on goal setting, with the major finding being that goal setting increases productivity when individuals accept specific difficult goals and receive feedback concerning their performance (cf. Locke & Latham, 1990). Little research has examined the effect of goals on creativity or how creativity goals affect various aspects of performance. A creativity goal is a stated standard that output should be creative—novel and appropriate. Just as productivity goals affect the quantity of performance, creativity goals might induce individuals to perform at a desired level and also serve as a standard against which task behavior could be self-evaluated. This research examined the effects on creativity and productivity of setting no creativity goal and setting a do-your-best goal, in which individuals are asked to perform at their own self-perceived maximum, without being given a specific performance standard to attain. I employed a do-your-best creativity goal instead of a specific creativity goal because in prior research (Shalley, 1991), I found that do-your-best and specific, difficult creativity goals affected creativity in the same manner.

The presence of a creativity goal has been found to have a positive, significant effect on creative behavior (Shalley, 1991), perhaps because goals represent a challenge that enhances individuals' intrinsic motivation to perform. Also, since goals are effective in directing attention to particular facets of a task that may facilitate information acquisition, the presence of a creativity goal would be expected to influence several of the cognitive activities needed for creativity. In order to produce creative responses, an individual

must search a number of response pathways and generate a variety of possibilities before settling on a final response. The more possibilities explored, the greater the chance that a creative response will be generated. Assignment of a creativity goal should cause individuals to spend more time thinking about a task and trying to expand the range of potential solutions considered. Individuals who are not assigned a creativity goal may explore only a few potential solution pathways before generating a final solution. For example, cognitive activities such as problem definition and data gathering could be aided by the directive function of a goal. Similarly, providing a goal may enhance individuals' evaluation of the merits of a solution. Therefore, individuals assigned a do-your-best creativity goal were expected to be more creative than those with no creativity goal since their attention and effort would be directed toward being as creative as possible.

Hypothesis 5: Individuals assigned a do-your-best creativity goal on a complex-heuristic task will have higher levels of creativity than those with no creativity goal.

As for productivity, goal setting research (cf. Locke & Latham, 1990) suggests that productivity will suffer when a creativity goal is assigned. Numerous studies have found that when a goal is assigned for one performance dimension, performance is lower on all other dimensions for which no goal is set (e.g., Bavelas & Lee, 1978). This result occurs because goals are attentional controls, causing performance on dimensions they do not directly address to suffer. Furthermore, since it was proposed that a creativity goal would encourage individuals to pursue a variety of solution pathways before generating a final solution, those assigned a creativity goal would be expected to have lower productivity than those with no creativity goal.

Hypothesis 6: Individuals assigned a do-your-best creativity goal on a complex-heuristic task will have lower levels of productivity than those with no creativity goal.

Additionally, this research explored potential interactions of creativity goals with the presence of coactors and the expectation of evaluation in affecting individuals' creativity and productivity. These variables might interact in a few possible ways to influence creativity. First, working in the presence of coactors on a complex-heuristic task may not be as detrimental to creativity and productivity as previous findings have suggested when a creativity goal is assigned because the goal will direct attention and effort toward being creative and cause individuals to concentrate on the task while ignoring or screening out the presence of others. Second, the assignment of a creativity goal may heighten the salience of evaluation, causing individuals to spend more time worrying about their evaluation than they would otherwise and thereby decreasing their level of creativity. Working in the presence of coactors might further suppress creativity by increasing individuals' evaluation apprehension and their concerns about social comparison when an evaluation is expected and a creativity goal is assigned. Finally, it may be that the highest levels of creativity will occur when individuals work

alone under no evaluation with a creativity goal. In such circumstances, their attention and effort would be focused on creativity as there would be no external distractions from coactors or evaluation apprehension.

Two studies were conducted to test the proposed hypotheses and examine potential interactions. Study 1 investigated the effects of individuals' working in the presence of coactors with or without the expectation of evaluation on individual creativity and productivity on job-related problems, testing Hypotheses 1-4. Study 2 sought to verify and extend study 1 by examining whether the assignment of a creativity goal affected the results obtained. Thus, study 2 examined the interactive effects of coaction, expected evaluation, and a creativity goal on creativity and productivity, testing Hypotheses 1-6.

STUDY 1: METHODS

Design and Subjects

A two-by-two design was used; subjects either worked alone or in the presence of others working on the same task and either expected an evaluation or did not expect one. Eighty-four undergraduate students enrolled in an organizational behavior course participated in this research for extra credit. The average age of the subjects was 22 years, and 63 percent were men. Subjects were randomly assigned to the experimental conditions.

Task and Procedures

Subjects were given standardized instructions explaining the task and establishing the experimental conditions. The task, an "in-basket exercise" considered to be complex-heuristic (Shalley, 1991), involved responding to a series of problems presented to the human resource director of a steel company. Subjects received a packet of 22 memos, information on their role as the human resource director, and a brief description of the company. All subjects were given a focus on both creativity and productivity by being told that they should try both to be highly creative in generating a solution to each problem and to do their best to generate solutions to as many memos as possible in the time allotted. Creative solutions were defined for subjects as novel and appropriate ones. Subjects were asked if they had any questions and given 30 minutes to complete the task. At the end of the 30 minutes, they were asked to complete a questionnaire and were debriefed.

Manipulations

Presence of others. Subjects worked alone in a private room or at a conference table with five other students doing the same task.

Expected external evaluation. The experimenters made no mention of evaluation to subjects in the no-expected-evaluation condition. Subjects in the expected-evaluation condition were told their quantity of performance and the creativity of their responses on this task would both be compared to that of all the other students doing the task and evaluated by experts.

Measures

Manipulation checks. Questionnaire items administered after the experimental period measured the effectiveness of the expected evaluation manipulation. As a check for the expectation of evaluation, each subject responded to the following items: "My performance was measured and evaluated by others," "I felt as though I was competing with others on this task," and "My performance was evaluated and compared with the performance of others on this task" (1 = strongly disagree, 7 = strongly agree). These three items were averaged ($\alpha = .76$) to provide an index of the expectation of evaluation.

Creativity. All subjects' responses were analyzed using a consensual assessment technique developed by Amabile (1983). Three doctoral students served as expert judges. Judges had relevant graduate degrees (an M.B.A. or an M.A. in management) and 2–8 years of work experience in human resources. The judges were blind to the proposed hypotheses and conditions used in this research. The judges were asked to independently rate the overall creativity of each solution generated on a seven-point scale (1 = not at all creative, 7 = extremely creative). Using this information, I computed a creativity score that was an average of the creativity ratings for each individual across all solutions generated. The interrater reliability for the judges' ratings of creativity, calculated with a Cronbach's alpha, was .77.

Productivity. The number of memos to which a solution was generated during the experimental period was used as an index of productivity.

STUDY 1: RESULTS

Manipulation Checks

Subjects' perceptions of the expectation of evaluation revealed a significant main effect for expected evaluation ($F_{1,79} = 17.05, p < .001$). The mean score on this index for individuals with no expected evaluation was 2.83, and for those who expected an evaluation, it was 4.07.

Creativity

Creativity scores ranged from 2.14 to 4.51, with a mean of 3.16 and standard deviation of 0.47. Table 1 presents results of a two-way analysis of variance (ANOVA) with creativity as the dependent variable. Table 2 presents cell means. Supporting Hypothesis 1, a significant main effect occurred for the presence of others, with individuals working alone having higher creativity than those working with others present. There were no other significant effects; thus, Hypothesis 3 was not supported. Gender was used as a covariate in analyses of covariance (ANCOVAs) for creativity and productivity since those variables may differentially affect men's and women's performance (Roberts, 1991). The covariate was nonsignificant in both analyses.

TABLE 1
Summary of Analysis of Variance for Creativity and Productivity in
Studies 1 and 2

Variable	df	Mean Square	F
Study 1			
Creativity			
Presence of others	1	1.60	7.58**
External evaluation	1	0.00	0.01
Others × evaluation	1	0.01	0.04
Error	80	0.21	
Productivity			
Presence of others	1	6.15	0.43
External evaluation	1	99.70	6.97**
Others × evaluation	1	56.32	3.94*
Error	80	14.30	
Study 2			
Creativity			
Presence of others	1	0.08	0.10
External evaluation	1	0.17	0.27
Creativity goal	1	7.53	12.32***
Others × evaluation	1	0.34	0.56
Evaluation × goal	1	0.43	0.71
Others × goal	1	0.12	0.20
Others × evaluation × goal	1	4.21	6.88**
Error	128	0.61	
Productivity			
Presence of others	1	90.52	12.67***
External evaluation	1	10.32	1.44
Creativity goal	1	27.16	3.80*
Others × evaluation	1	6.77	0.95
Evaluation × goal	1	2.66	0.37
Others × goal	1	2.01	0.28
Others × evaluation × goal	1	3.55	0.50
Error	128		

* p < .05

** p < .01

*** p < .001

Productivity

Productivity ratings ranged from 3 to 22, with a mean of 10.23 and a standard deviation of 3.97. The correlation between productivity and creativity was -.06 (n.s.). Results of a two-way ANOVA with productivity as the dependent variable indicated a significant main effect for evaluation. Individuals with no expectation of evaluation completed significantly more memos than those expecting an evaluation, supporting Hypothesis 4. There was no significant effect for coaction; thus, Hypothesis 2 was not supported. Also, there was a significant two-way interaction (see Tables 1 and 2). Comparisons among means (Newman-Keuls test; Keppel, 1982) indicated that individuals who worked alone with no expectation of evaluation had sig-

TABLE 2
Study 1 Results

Experimental Condition	Alone	Coaction	Overall
Creativity			
No evaluation			
Mean	3.29	3.03	3.16
s.d.	0.41	0.43	0.47
Evaluation			
Mean	3.32	3.02	3.16
s.d.	0.53	0.46	0.52
Overall			
Mean	3.30	3.03	
s.d.	0.47	0.44	
Productivity			
No evaluation			
Mean	11.86	10.76	11.31
s.d.	5.23	3.28	4.35
Evaluation			
Mean	8.00	10.18	9.14
s.d.	3.39	2.79	3.24
Overall			
Mean	9.98	10.47	
s.d.	4.79	3.02	

nificantly higher levels of productivity ($p < .05$) than individuals who worked alone with the expectation of evaluation.

STUDY 2: OVERVIEW

Study 2 examined whether assigning a creativity goal interacted with the effects of coaction and expected evaluation on creativity and productivity. Goals affect motivation by a self-regulatory mechanism, mobilizing and directing attention and effort. An assigned standard becomes a goal when it is accepted and internalized (Earley & Shalley, 1991). Although in study 1 individuals were given both creativity and productivity focuses, no goals were actually assigned. Past research has indicated that creativity goals can increase creative performance (Shalley, 1991), but a creativity focus has not been found to necessarily increase the incidence of creativity (Amabile, 1979). Having goals appears to present a different process than having a focus. Therefore, accepting an assigned creativity goal should cause individuals to channel all of their attention and effort into generating novel and appropriate responses, resulting in high creativity.

Besides comparing the effects of the presence and absence of a creativity goal, study 2 sought to verify study 1's results, particularly since there were inconsistencies between the results of study 1 and prior research (Amabile et al., 1990). Study 2 differed from study 1 in two ways. First, since results for evaluation's effect on creativity were not as expected, I made an effort to

clarify and strengthen this manipulation. There were two specific reasons to do so: (1) although results of the manipulation check were significant, the mean for expected evaluation was quite low (4.07 on a 7-point scale) and (2) since individuals were asked to try to be both creative and productive and told that their evaluation would be based on these two criteria, it was not clear whether individuals felt that the expectation of evaluation was more salient (and thus had higher evaluation apprehension) for one of the outcome measures than for the other. Second, although the study 1 subjects were not told to complete all 22 memos but to do their best to answer as many memos as they could, the implication of receiving 22 memos may have been that they should complete all the memos in 30 minutes. Trying to do that may have left little time for them to concentrate on being creative on the task. To deal with this issue, I gave study 2 subjects only 4 of the original 22 memos to work on in the 30 minutes. They were told that they could spend as much time as they liked on each memo, that they need not feel they had to complete all the memos, and that it was permissible to work on only one or two memos for the entire 30 minutes. Thus, although the effects of these variables were examined for productivity, the primary focus of study 2 was on creativity.

STUDY 2: METHODS

Design and Subjects

A two-by-two-by-two (alone/coaction by no evaluation/expected evaluation by no creativity goal/creativity goal) factorial design was used. One hundred and thirty-six undergraduates participating in this research for extra credit in a course were randomly assigned to the experimental conditions. Their average age was 22 years, and 52 percent were women.

Procedures

Standardized instructions were given explaining the task and establishing the experimental conditions. All subjects were told that they could spend as much time as they liked on each memo and that they did not have to complete all the memos. They were also told that they could provide more than one solution to each memo and that they had 30 minutes to complete the task. Subjects subsequently responded to a questionnaire and were debriefed.

Manipulations

Presence of others. Subjects worked alone in a private room or in the presence of coactors, four to five others working on the task seated around a conference table.

Expected external evaluation. Subjects either did or did not expect an evaluation. In the expected evaluation condition, they were told the following: "Your solutions will be compared to those of all the other students participating in this task and evaluated by two experts in personnel. These

are people who have actually worked in Human Resources, who will be performing a detailed analysis of the **content** of your solutions. At the end of this study you will receive a copy of the experts' evaluation, so you will find out how well you did on this task according to the experts. Later, when you are filling out the questionnaire, you will be asked to fill out a separate sheet of paper providing a mailing address for the evaluation to be sent to."

Creativity goal. Subjects were either assigned no goal or given a do-your-best creativity goal. In the creativity goal condition, individuals were told that they should do their best to generate highly creative solutions to the memos, using a "tell-and-sell" method of goal assignment (Locke & Latham, 1990). Creative solutions were described as both original and appropriate; therefore, subjects were told, they needed to generate solutions that weren't the typical response to these types of problems in organizations and yet were not bizarre—solutions were to be original but not impractical, illegal, or the like. All individuals in this condition were asked if they were willing to try to be highly creative, and 100 percent of them agreed.

Measures

Manipulation checks. For the expectation of evaluation, subjects responded to the following two items on the same seven-point scale used in study 1: "My performance will be evaluated and compared with the performance of others in this task" and "I felt as though my performance on this task would be evaluated." These items were averaged ($\alpha = .68$) to form an index. As a check for the presence of a creativity goal, subjects were asked to respond to the following item on the same scale: "I had a creativity goal to meet on this task."

Creativity. Responses were analyzed as in study 1, and two of the same doctoral students were expert judges. Interrater reliability for the raters (Cronbach's alpha) was .95.

Productivity. The number of solutions generated was used as the index of productivity since subjects were told that they could generate multiple solutions to any of the four memos given.

STUDY 2: RESULTS

Manipulation Checks

Subjects' perceptions of the expectation of evaluation revealed a significant main effect for expected evaluation ($F_{1,128} = 29.12, p < .001$), with a mean of 4.72 for no expected evaluation and of 5.74 for expected evaluation. For the presence of a creativity goal, there was a significant main effect for the creativity goal condition ($F_{1,128} = 36.94, p < .001$), with a mean of 3.76 for no creativity goal and of 5.40 for a creativity goal.

Creativity

Creativity ratings ranged from 1 to 6, with a mean of 3.94 and a standard deviation of 0.82. Table 1 presents results of a three-way ANOVA with

creativity as the dependent variable, and Table 3 presents cell means. There was a significant main effect for the creativity goal, supporting Hypothesis 5. The mean creativity rating for those with no goal was 3.71, and it was 4.18 for those with a creativity goal. There was also a significant three-way interaction. Comparisons among means (Newman-Keuls test) indicated that the only significant differences were that individuals with a creativity goal who worked alone under the expectation of evaluation had significantly higher creativity ($p < .05$) than those with no creativity goal who worked alone and expected evaluation and those with no creativity goal who worked in the presence of coactors and did not expect evaluation. ANCOVAs testing for creativity and productivity with gender as the covariate indicated that the covariate was nonsignificant for both analyses.

Productivity

Productivity ranged from 1 to 15 solutions, with a mean of 5.99 and a standard deviation of 2.80. The correlation between creativity and productivity was $-.11$ (n.s.). Results of a three-way ANOVA with productivity as the dependent variable indicated a significant main effect for working in the presence of coactors (see Table 1). The mean score on this index for working alone was 5.13, and it was 6.76 for working in the presence of coactors. There was also a main effect for this creativity goal, supporting Hypothesis 6. The mean score for subjects having no goal was 6.41, and for those with the creativity goal, it was 5.54. There were no other significant effects.

TABLE 3
Study 2 Results

Experimental Condition	No Creativity Goal			Creativity Goal		
	Alone	Coaction	Overall	Alone	Coaction	Overall
Creativity						
No evaluation						
Mean	3.96	3.50	3.74	4.00	4.16	4.09
s.d.	0.76	0.47	0.67	0.72	0.78	0.75
Evaluation						
Mean	3.45	3.88	3.70	4.46	4.08	4.28
s.d.	0.57	0.64	0.64	1.24	0.88	1.08
Overall						
Mean	3.70	3.73		4.24	4.12	
s.d.	0.71	0.60		1.04	0.81	
Productivity						
No evaluation						
Mean	5.88	7.13	6.48	5.40	6.47	6.00
s.d.	2.96	2.90	2.95	2.20	2.12	2.19
Evaluation						
Mean	5.47	7.00	6.35	3.75	6.40	5.03
s.d.	2.81	3.18	3.09	1.39	3.16	2.73
Overall						
Mean	5.67	7.05		4.55	6.44	
s.d.	2.85	3.03		1.98	2.58	

GENERAL DISCUSSION

This research examined effects of coaction, expected evaluation, and creativity goals on creativity and productivity. Study 1 focused on the effects of coaction and evaluation and found that the best condition for generating high creativity was working alone and the best condition for generating high productivity was working alone with no expectation of evaluation. Study 2 extended study 1 by examining the interactive effects of creativity goals on creativity. Results of both studies indicate that expecting evaluation is not necessarily harmful to people's creativity. In study 1, an expectation of evaluation had no effect on creativity, and in study 2 it was found to be beneficial for creativity in certain situations. Furthermore, both studies suggest that working alone can, in certain situations, be more conducive to creative performance than working in the presence of coactors. Finally, results of study 2 indicate that the assignment of a creativity goal boosts creative performance but depresses productivity.

The picture that emerged from examining the interactive effects of these contextual factors on creativity in study 2 was more complex than had been expected. Specifically, individuals who had a creativity goal and worked alone under the expectation of evaluation had the highest levels of creativity. Perhaps individuals in this condition, who knew what was expected of them on the task and were free from external distractions, directed all their attention and effort toward generating novel and appropriate responses. But individuals in the cells that had the lowest creativity (no creativity goal, alone, evaluation and no creativity goal, coaction, no evaluation) may have been distracted by coactors or focused on evaluation, and they had no creativity goal redirecting their attention and effort.

Cognitive evaluation theory (Deci & Ryan, 1980) can be helpful in interpreting the unexpected positive impact of evaluation on creativity for the individuals working alone and having a creativity goal. According to this theory, external factors, such as contingent rewards and limits on behavior, have two aspects, controlling and informational. These two aspects influence how individuals judge their competence and self-determination on a task (i.e., their effectiveness as causal agents), with their relative saliency determining their effect on intrinsic motivation. When the controlling aspect is salient, the perceived locus of causality should be external, which will have a negative effect on intrinsic motivation and creativity. When the informational aspect is salient and positive information is conveyed or perceived, intrinsic motivation will remain stable or increase. Past research has shown that the manner in which a factor is administered or how it is interpreted influences which aspect is salient (Phillips & Freedman, 1988; Ryan, 1982; Ryan, Mims, & Koestner, 1983). Therefore, in this study the relative salience of the controlling and informational aspects of expected evaluation may have mediated the effects of evaluation on creativity through its effect on intrinsic motivation. The informational component of expected evaluation would have been expected to be salient in this research, given the nature

of the task and subjects. Most of the latter were business majors who should have had some familiarity with this type of task and thus, would have been interested in receiving an evaluation of their creativity in generating solutions to managerial problems. Thus, they should have perceived expert judgments on how well they performed, with no punishment or retaliation for poor performance, as primarily informational. Therefore, creativity may have been enhanced because they could work free from distractions, had a creativity goal that mobilized and directed attention and effort, and expected an informational evaluation.

The results of this research highlight how little is known of expected or actual evaluation's impact on performance. Although previous research has shown positive effects of evaluation for productivity and negative effects for creativity and intrinsic motivation with some consistency, a review of the literature indicates variation in the results of the various studies addressing this issue depending on the type or form of evaluation used (e.g., Amabile, 1979; Jackson & Zedeck, 1982; Shalley et al., 1987). For instance, Jackson and Zedeck (1982) found evaluation had a positive impact on productivity when people expected a peer evaluation and a negative impact on productivity when the evaluation expected was a compliance evaluation, with a punitive connotation. Similarly, Harackiewicz, Abrahams, and Wageman (1987) found that the type of evaluation used was a critical moderator of its effect on intrinsic motivation. Therefore, differences in how expected evaluation is manipulated may also be responsible for the different effects on creativity that have been observed. Some prior research (e.g., Amabile, 1979; Amabile et al., 1990) has found that expected evaluation has a significant, negative effect on creativity, but other research has found that competitive evaluation can boost creativity (Raina, 1968; Torrance, 1965). In the research reported here, the evaluation used was what Harackiewicz and colleagues (1987) called task-focused feedback, which they found increased intrinsic motivation, unlike other forms of evaluation, which undermined it. Thus, the type of evaluation expected or received may be the critical factor in determining whether evaluation facilitates or inhibits creativity and productivity. Furthermore, the type of task evaluated may help explain differences in results for creativity.² For instance, in this research individuals were judged on their creativity in generating solutions to managerial problems, but in Amabile's research (Amabile, 1979; Amabile et al., 1990), individuals' creativity on artistic tasks, such as making collages and writing haiku, were examined. These types of tasks were presumably less familiar to most individuals than the task used here, and it is unclear whether people would see evaluation of their work on artistic tasks as informational or controlling. Thus, differences in the perceived degree of informational value an evaluation has for different tasks may explain the observed results. It is also possible that the task used in this research was not complex-heuristic for these business students, who

² I thank an anonymous reviewer for suggesting this possibility.

may have developed schemata to deal with such organizational issues. Finally, discrepancies between these and previous results may also be due in part to the difficulties inherent in trying to capture the true effects of evaluation on performance by manipulating evaluation in a laboratory, where a negative evaluation may hurt an individual's self-esteem but do no harm to his or her pay, job security, or promotion opportunities. Therefore, to have results that are consistent across studies and generalizable from the laboratory to the field, researchers need to both realistically manipulate the types of evaluation they are interested in and to clearly specify how evaluation was manipulated.

The results of study 2 indicate that assigning a creativity goal has a significant, positive effect on individuals' creativity. A creativity goal appears to motivate individuals to direct their attention and effort toward producing novel and appropriate responses. Additionally, individuals assigned a creativity goal had lower productivity than those with no goal, presumably because they were focusing their attention and effort on creativity rather than productivity. Together, these results indicate that goal setting can be an effective mechanism for enhancing performance as long as goals are set for all desired performance dimensions.

Unexpectedly, results of study 2 indicated that productivity was higher for subjects working in the presence of others than for those working alone. It had been hypothesized that productivity would suffer under coaction since the task was complex-heuristic. According to social facilitation research (Guerin, 1986), the presence of coactors increases drive/arousal, facilitating simple, routine responses and impairing complex, counterinstinctual responses. There are two possible explanations for this result. First, even though the task used here was a complex-heuristic one, the simplest way to respond to it may have been to provide a solution, irrespective of the quality of that solution. Thus, productivity was higher for those with coactors since generating any solution represented a more routine response than generating a creative or high-quality solution. The opposite result occurred in study 1, where individuals working alone had higher productivity. It should be noted that study 2 was not a straight replication of study 1; rather, it represented an improvement in the task and manipulations. These changes may explain some of the observed differences between the two studies for both evaluation and coaction. For instance, in study 2, subjects were told to produce creative solutions and to have no concern about the number of solutions, but in study 1 all subjects were told to be creative and productive, with the implication being that any response produced would be creative. Furthermore, although a productivity goal was not assigned and accepted, the productivity focus in study 1 may have caused individuals to set personal goals for themselves that caused productivity to be higher under no expectation of evaluation than under the expectation of evaluation. A second possibility was that the task was not truly complex-heuristic for these subjects, and so a social facilitation effect occurred.

Some limitations of this research concern external validity. For in-

stance, these studies represent only two laboratory investigations using an undergraduate student population that, compared to the general population, may lack sufficient variation on the dimensions examined. Also, since only one task was used, the results obtained may not transfer to other tasks and conditions. Creativity exists on a continuum, with creative solutions and strategies ranging from minor adaptations to major breakthroughs; this research examined only one level of creativity: generating creative solutions for common managerial problems. Thus, the results of this research may not be generalizable to other levels of creativity. Furthermore, subjects in this research were asked to be highly creative in generating solutions to problems. Results may have differed if they had been asked to do their best to be creative rather than to try to be highly creative. Future research should examine how these variables affect a wide range of creative performance on different types of tasks. Finally, I did not examine individual differences in this study. It is possible that the presence of others or the expectation of evaluation may affect some people more than others. Also, research has suggested that some individuals are more achievement-oriented or goal-directed than others (cf. Locke & Latham, 1991). Future research is warranted in this area.

Results of this research suggest that under certain conditions, evaluation can be beneficial for creativity. Since some level or form of evaluation is implicit in any job, these results are heartening. Previous research has found that effects on performance and intrinsic motivation differ with the type of evaluation expected (Harackiewicz et al., 1987; Jackson & Zedeck, 1982). Similarly, whether evaluation has a neutral, positive, or negative effect on creativity may depend on the type of evaluation an individual expects. Therefore, it appears important to further examine the role of different types of evaluation, both actual and expected evaluation, to understand creativity and productivity at work. Moreover, this research indicates that assigning a creativity goal can alleviate some of the potential problems coercion and evaluation hold for creativity by motivating individuals and directing their attention and effort. Results of this research have two main implications for creativity models. First, the potential differential effects of the informational and controlling aspects of social and contextual factors on creativity need to be further addressed. This focus is particularly important for theoretical models dealing with organizational creativity since external factors or constraints will always be present in some form, but the manner in which they are presented and how they are perceived may be critical in determining their effect on creativity at work. Second, the role of creativity goals in motivating individuals and directing attention and effort needs to be included, along with how creativity goals interact with key social and contextual influences on creative performance.

According to Woodman and colleagues (1993), creative performance in organizations is a function of salient individual, group, and organizational characteristics that interact to enhance or constrain creativity. Although it may be possible to select individuals on the basis of their creative ability,

little is known of how organizations can support and nurture creativity. Therefore, Woodman and colleagues called for a systematic investigation of social and contextual influences at all levels on creativity. Results of this research have implications for organizations interested in creating the right environment to enhance individual creativity. Specifically, this research indicates that when a creativity goal is assigned and individuals work free from the distraction of others and with the expectation of evaluation, their creativity is enhanced. These results present a challenge for designing organizational systems that incorporate office arrangements, performance goals, and evaluation systems that are appropriate for the type of performance desired. For instance, the present results suggest that if creative performance is desired it can be preferable, under certain situations, to place individuals in private or partitioned offices rather than in open offices. Further research should focus on whether other attributes of the physical space in which work is carried out significantly interact with critical social and contextual factors to affect individuals' creativity.

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CORPORATE SUPPORT IN THE AFTERMATH OF A NATURAL DISASTER: EFFECTS ON EMPLOYEE STRAINS

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Relief services provided by corporations to employees following a natural disaster were expected to be associated with reduced levels of employee strains. Data from 143 hurricane victims partially supported this prediction, revealing that tangible support meeting employees' primary needs had the most numerous effects over the course of the disaster aftermath.

Natural disasters are acute events that disrupt normal business operations and impinge on employees' well-being. For instance, Hurricane Andrew, reputedly the United States' costliest natural catastrophe, ripped through south Florida in the early morning hours of August 24, 1992, leaving 250,000 people homeless (Moore, 1992) and interrupting the operations of some 8,000 businesses employing about 123,000 people (Maidique & Jorge, 1992). In the aftermath of Hurricane Andrew, many firms quickly understood the serious effects that a disaster of this magnitude could have on their work forces and mobilized their resources to help employees rebuild their lives (Doup, 1992).

The present study capitalized on this unique research opportunity and examined the effects of corporate relief efforts on employees' organizational and health-related strains. This research question appeared worthy of investigation for both practical and theoretical reasons. First, few individuals can focus on their jobs when they are overwhelmed by a myriad of problems concerning such matters as insurance, construction repairs, and lack of electric power (Neely-Martinez, 1993). In addition, heavy destruction of the area coupled with property losses probably led many employees to consider relocating, which would have increased costs associated with turnover for their employers. Therefore, helping employees get back to normalcy might have been not only a gesture of good citizenship on the part of employers, but also an effective organizational intervention.

Second, although disaster researchers have reported some effects of social support on strains (Chisholm, Kasl, & Mueller, 1986; Kaniasty, Norris, & Murrell, 1990), virtually no studies have examined employer-sponsored relief efforts. Similarly, research on acute events has centered on health strains

(Green, 1991; Phifer, Kaniasty, & Norris, 1988; Phifer & Norris, 1989) and, with a few exceptions (Anderson, 1976; Barling, Bluen, & Fain, 1987; Chisholm, Kasl, & Ekenazi, 1983), has overlooked job strains (Bhagat, 1985). A noteworthy distinction in this study is that between strains and stressors. Whereas the term stressor refers to environmental conditions, strain refers to an individual's response to these conditions (Jex, Beehr, & Roberts, 1992).

HYPOTHESES

The literature on the role of social support in people's attempts to cope with organizational stressors provided the theoretical grounds of our study. Indeed, social support often mitigates strains (Beehr, 1985; Cohen & Wills, 1985; Eisenberger, Fasolo, & Davis-LaMastro, 1990; Eisenberger, Huntington, Hutchinson, & Sowa, 1986; Sullivan & Bhagat, 1992). Considerable debate has surrounded the issue of whether social support exerts a direct influence on strains (has a main effect) or interacts with stressors to alleviate strains (has a buffering effect). There is evidence supporting both the presence of a main effect (e.g., Beehr, King, & King, 1990; Ganster, Fusilier, & Mayes, 1986; Melamed, Kushnir, & Meir, 1991) and the presence of a buffering effect (e.g., George, Reed, Ballard, Colin, & Fielding, 1993; Kirmeyer & Dougherty, 1988). However, findings on the latter have been inconsistent (see Cohen and Wills [1985] for a review), and some have been counterintuitive: Beehr, King, and King (1990) and Kaufmann and Beehr (1986) found a reversed buffering effect in which social support occasionally exacerbated the effects of stressors on strains.

Researchers have argued that the inconclusive evidence regarding the effects of support on strains might be the result of not only methodological shortcomings such as insufficient statistical power, but also of failure to distinguish among different types of support, the contents of support-related communications, sources of support, and the extent to which support matches needs (Beehr et al., 1990; Cohen & Wills, 1985; Ganster et al., 1986; Sullivan & Bhagat, 1992). In this vein, Beehr (1985) suggested that emotional support—information that a person is esteemed and accepted (Cohen & Wills, 1985: 313)—does not target the cause of stress and therefore only buffers strain. By contrast, instrumental, or tangible, support directly aims at the source of stress and thus would most likely have a main effect on strains. Cohen and Wills also noted that a key to the effectiveness of social support may be the extent to which it matches the particular stressors experienced. The stressors immediately following the disaster that we focused on were lack of food, transportation, and adequate housing. Hence,

Hypothesis 1: Tangible support directly aimed at the immediate stressors provoked by an acute disaster will reduce employee strains.

Employees' needs for support are likely to change over the course of a disaster's aftermath. New stressors, such as continued construction and repairs, insurance problems, and deadlines associated with applications for

federal aid, are likely to emerge a few days after the disaster. Forms of employer support other than emergency assistance will be needed at later stages to cope with these emerging stressors. Thus,

Hypothesis 2: Employer support other than emergency assistance will be associated with longitudinal changes in employee strains in the weeks following a disaster.

Our hypotheses were tested using a longitudinal design. Our choice of health-related strains was driven by a review of posttraumatic event symptomatology, which includes anxiety, guilt, sleep disturbances, depression, and impaired concentration (Green, 1991; Nolen-Hoeksema & Morrow, 1991; Phifer et al., 1988; Phifer & Norris, 1989). We also considered three organizational strains potentially related to employer and job affect—low organizational commitment, low job satisfaction, and work tension—to be likely to be influenced by employer-sponsored support and examined them herein.

METHODS

Sample

Seniors at a Florida university were grouped into 12 teams with 3 to 5 members each. We instructed the teams to locate individuals (1) whose property or community was in the disaster area and (2) who were currently employed. Teams were encouraged to rely on personal contacts, co-workers, and other acquaintances to find such individuals. A total of 213 individuals contacted by the survey teams chose to participate in the study. Data on unemployed people and on those who reported no losses from the hurricane or who provided largely incomplete surveys were discarded, a process resulting in a final sample of 166 individuals.

Our sample, which was 45 percent female, was 2.5 percent Asian, 6 percent black, 49 percent Hispanic, and 27 percent white; the rest of the sample's members chose not to report their ethnicity. This ethnic breakdown resembled the latest figures for the area's population (Fiedler, 1992). However, the modal age (between 30 and 39 years old) and two facts—that only 61 percent of the respondents provided at least 21 percent of their households' income and that only 68 percent had at least one dependent—suggested that our sample might have included numerous secondary wage earners. Nevertheless, a total of 62 different occupations were represented: secretaries (13 individuals), managers (26), administrative officers (12), salespersons (6), account executives (4), and real estate agents (5) were the most numerous. Self-estimates of hurricane-related losses ranged from \$200 to \$500,000, with a median of \$16,000.

Procedures

Questionnaires were first administered by the student teams in the 20 to 30 days following the hurricane. Respondents were asked to provide the last four digits of their social security numbers so that their responses on the first

survey could be matched with those to a follow-up survey. Questionnaires were otherwise anonymous, and subjects were assured that their responses would be used only for research purposes and that they would be kept strictly confidential. Information on employee strains and demographics were gathered from the first questionnaire administration. Subsequently, survey teams interviewed members of the staffs of corporations that had, according to lists appearing in the local press (Moore, 1992), provided relief services to their employees. These interviews were intended to identify the various services being offered. Each team produced a list of relief services, and we consolidated the contents of these lists into 19 service categories.

People who responded to the first survey were asked to complete a follow-up questionnaire in the period 80–90 days after the date of the hurricane. Information on stressors, strains, and relief services was gathered on this second questionnaire. Probably because of their personal or professional ties to the members of the survey teams, most respondents (143, 86 percent of those whose data were kept in the first administration) answered the second survey. Demographic differences between respondents and nonrespondents were not apparent in their respective frequency distributions.

Measures

Stressors. In the second survey, respondents were asked to estimate the dollar value of their hurricane-provoked losses. Stressors were measured as the level of loss resulting from the hurricane. First, to counter the presence of several outliers, we subjected the dollar estimates of hurricane-provoked losses to logarithmic transformation. Then, because sample demographics suggested there were many secondary income earners, we weighted transformed disaster-provoked loss by contribution to household income, which ranged from "less than 20%" (1) to "more than 95%" (5). The rationale behind using this formula was that losses would be more stressful for primary than for secondary income earners.

Corporate support. On the second survey, respondents were asked (1) to rate the extent to which their employers provided each of the relief services identified, on a five-point scale ranging from 1, "relief service was not provided by my employer," to 5, "I was often helped by my employer in this manner," and (2) to rate their need for each service, on a scale ranging from 1, "no need," to 5, "very much in need." To facilitate interpretation of the effects of support on strains, given the variety of services included, we reduced relief efforts to three types—tangible primary support, tangible secondary support, and social support—through a factor analysis of the 19 relief service categories. Ganster and colleagues (1986) noted that measures of support should include assessments of the quality of support. Therefore, we measured employer support as the match between the services provided and individuals' needs for each category of support. Initially, support scales were negatively rated, with high values indicating low-quality support. We then standardized these difference scores to prevent violations of distribution assumptions (Cronbach & Furby, 1970) and transformed them to T-

scores to elude negative values. For the sake of clarity, we reversed the T-scores by subtracting them from 100 so that high values indicated high-quality support.

Strains. Ratings on the items in seven scales measuring strains were added to derive total scores. Cronbach's alphas ranged from .76 to .93 on the first survey and from .79 to .93 on the second survey. The following scales, listed in the same order in which they appeared, were included on both questionnaires: Anxiety was measured with the state anxiety scale from the State-Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970). A sample item is "I feel calm." Five-point scales, ranging from "not at all," 1, to "very often," 5, were employed. Our symptoms scale included 15 items dealing with physical symptoms associated with posttraumatic stress disorder (Green, 1991), which were selected from symptom scales used by Chen and Spector (1991). These items covered stomach problems ("I have been bothered by acid indigestion or heartburn"), weakness and fatigue ("I have felt weak all over"), shortness of breath ("I have experienced rapid heart beating when not exercising"), and loss of sleep and nightmares ("I have had trouble sleeping"). Responses ranged from "never," 1, to "very often," 5. Depression, which is traditionally associated with posttraumatic stress (Green, 1991), was assessed with the Beck Depression Inventory (Beck & Steer, 1987). Respondents chose one of four alternative statements; an example is "I do not feel particularly guilty," 1, to "I feel guilty all the time," 4. Organizational commitment was measured with the nine-item scale proposed by Cook and Wall (1980); an example is "I am proud to be able to tell people who it is I work for." Job satisfaction was gauged with the three-item scale employed in the Michigan Organizational Assessment Questionnaire (Cammann, Fichman, Jenkins, & Klesh, 1979); an example is "All in all, I am satisfied with my job." Work tension was assessed with a seven-item scale developed by House and Rizzo (1972); an example is "I work under a great deal of tension." Responses on these three scales ranged from "I strongly disagree," 1, to "I strongly agree," 5.

Control variables. Data on gender, ethnicity, number of dependents, age, occupational category, and percentage of contribution to household income were gathered on the first survey. Dummy variables were used for gender (man = 1, woman = 0), ethnicity (Hispanic = 1, other = 0), and job type (manager = 1, nonmanager = 0). We used dichotomous differentiation for job type and ethnicity because of the small number of respondents within each more specific occupational category and from ethnic backgrounds other than Hispanic.

RESULTS

Factor Analysis

To categorize relief efforts, we conducted a common analysis on the ratings of corporate support. A scree plot of eigenvalues suggested a three-factor solution, which we rotated using a varimax criterion of simple struc-

ture because of our interest in obtaining moderately orthogonal factors representing diverse types of corporate support. An examination of factor loadings (Table 1) suggested the following factor labels: tangible primary support, which was support directed at covering such primary needs as housing, meals, and emergency supplies; tangible secondary support, which concerned secondary needs, such as those for cleaning, laundry, and child care; and social support, which involved counseling, information assistance, and social gatherings. The item assessing health care was assigned to secondary support in spite of its moderately high loading on social support as well. Deletion of this item was not considered appropriate because of the presumably high importance of postdisaster health care. Items were added within support categories to derive scales that were later standardized.

Descriptive Statistics

Table 2 presents descriptive statistics and correlations among demographic variables, stressors, support scales, and strains on both survey administrations. When strains were measured after 30 days, 5 of 18 correlations between the variables measuring support and those for strains were statistically significant. In contrast, 17 correlations between strains measured after 90 days and support were significant. It should be noted, however, that the data on support and 90-day strains were gathered cross-sectionally.

TABLE 1
Results of Factor Analysis^a

Relief Service Category	Tangible Secondary Support	Tangible Primary Support	Social Support
Tools and construction materials	.82	.12	.23
Power generators	.77	.17	.14
Laundry and dry cleaning	.75	.27	.14
Day care	.66	.39	.22
Animal care	.64	.17	.17
Storage space	.56	.23	.37
Health care	.50	.28	.43
Clean-up assistance	.84	.10	.21
Moving services	.80	.23	.05
Communications assistance	.60	.18	.26
Company-sponsored employee-to-employee network	.53	.37	.31
Transportation	.27	.82	.04
Financial assistance	.09	.81	.15
Housing	.33	.71	.13
Emergency supplies	.15	.68	.34
Meals	.27	.60	.30
Counseling	.31	.17	.80
Information	.12	.14	.76
Company-sponsored social gatherings	.27	.25	.71

^a Boldface values indicate item loadings on their respective factors.

TABLE 2
Descriptive Statistics and Correlations^a

TABLE 2 (continued)

	Variables ^b	30-day	80-day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
9. Social support																		
Mean	50.00	.13	.02	-.09	-.10	.03	.18*	.66**	.70**	.76	-.22**	-.31**	-.28**	.26**	.17*	-.24**		
s.d.	10.00																	
10. State anxiety																		
Mean	57.52	.52	.78	-.15	-.03	.05	.07	-.08	.01	-.31**	-.22**	-.23**	.03 (.93)	.65**	.66**	-.42**	-.31**	.37**
s.d.	13.47																	
11. Symptoms																		
Mean	34.38	.30	.43	-.17*	-.06	.02	.10	.10	.14	-.22**	-.14	-.12	.53**	.89 (.89)	.81**	-.30**	-.17*	.40**
s.d.	8.19																	
12. Depression																		
Mean	20.80	.19	.42	-.17*	-.04	-.02	.08	-.11	.03	-.12	-.10	-.11	.56**	.45**	.88 (.87)	-.42**	-.26**	.34**
s.d.	5.86																	
13. Commitment																		
Mean	32.43	.31	.70	.06	.00	.14	.06	.02	-.12	.11	.08	.07	-.23**	-.07	-.18*	.78 (.83)	.69**	-.38**
s.d.	6.46																	
14. Satisfaction																		
Mean	11.66	.11	.31	.05	.14	-.02	.02	-.01	-.23**	.07	.06	-.01	-.22**	-.16	-.18*	.78**	.82 (.79)	-.36**
s.d.	2.74																	
15. Work tension																		
Mean	17.95	.16	.36	.02	-.13	.16	.15	.17*	.15	-.12	-.11	-.21*	.37**	.48**	.83**	-.32**	-.32**	.88 (.87)
s.d.	6.46																	

* N = 143. Correlations below the diagonal are for the 30-day data, and correlations above the diagonal are for the 90-day data. Lack of a correlation in a cell indicates there is no applicable value for the variable. Cronbach's alphas are on the diagonal, in parentheses.

* p < .05

** p < .01

Tests of Hypothesis 1

The pattern of correlations indicated that ethnicity and disaster-provoked losses had a significant association, probably because the area most affected by the hurricane was predominantly populated by Hispanics. Both age and number of dependents were negatively related to the amount of secondary support received from an employer, maybe because the respondents sought support from their families rather than from their employers.

In a series of hierarchical regression analyses (Table 3), we regressed each strain on gender and job type in the first step. To prevent unwanted multicollinearity resulting from these relationships with stressor and support scales, and given that ethnicity, age, and number of dependents did not reliably correlate with any of the employee strains considered, we did not control for these three demographic variables in these analyses. Then the composite representing losses was entered in a second step. The three support scales were entered at a third step, followed by the interactions between stressors and support at step 4. To control Type I error inflation, we performed an F-change test for each step before considering the statistical significance of the beta weight corresponding to specific support scales or interactions. Tangible primary support had main effects on anxiety and symptoms, and social support had a main effect on work tension. No evidence of buffering effects emerged at step 4.

Tests of Hypothesis 2

Self-reports of corporate support and strains measured after 90 days were gathered cross-sectionally and, therefore, common method variance might have inflated their relationships. We used a confirmatory factor-analytic approach (McFarlin & Sweeny, 1992) to rule out this possibility. The rationale behind this approach is that if method variance poses a serious threat, a single latent factor will account for all manifest variables. The single-factor model was compared to an eight-factor model that included one latent factor for the three support scales and a latent factor for each of the remaining scales. We could not evaluate the fit of a just-identified ten-factor model without assuming perfectly reliable measures and thus assigned the three correlated support scales to the same latent factor. This eight-factor model was very close to the one assumed in our regression analyses. Using LISREL VI (Jöreskog & Sörbom, 1985), we determined that the eight-factor model fit the data better than the single-factor model ($\chi^2_7 = 37.15, p < .05$ and $\chi^2_{35} = 328.81, p < .05$, respectively). In addition, the Bentler-Bonett index (Bentler & Bonett, 1980) had a value of .89 with the single-factor version serving as the null model.

To examine longitudinal changes on strains as a function of corporate support, we first found the residuals of the 90-day measures by regressing them on their corresponding 30-day measures. Across strains, the 30-day measures accounted for 26 percent of the variance in the corresponding 90-day measures. The standardized residuals served as dependent variables

TABLE 3
Results of Hierarchical Regression Analysis for 30-Day Strains

Step/Variable	ΔF	df	R^2	Adjusted		
				R^2	ΔR^2	β
State anxiety						
1 Job status	1.85	2,136	.03	.01	.03	-0.02
Gender						-0.16
2 Losses	0.10	1,135	.03	.01	.00	0.03
3 Tangible primary support	5.00**	3,132	.13	.09	.10	-0.29**
Tangible secondary support						0.00
Social support						0.04
4 Losses \times primary	0.72	3,129	.14	.08	.01	-0.00
Losses \times secondary						0.41
Losses \times social						-0.69
Symptoms						
1 Job status	2.80	2,136	.04	.03	.04	0.12
Gender						-0.18
2 Losses	3.56*	1,135	.06	.04	.02	0.16*
3 Tangible primary support	3.71**	3,132	.14	.10	.07	-0.25*
Tangible secondary support						-0.08
Social support						0.06
4 Losses \times primary	1.00	3,129	.16	.10	.02	-0.51
Losses \times secondary						0.51
Losses \times social						-0.46
Depression						
1 Job status	2.54	2,136	.04	.02	.04	-0.08
Gender						-0.15
2 Losses	0.03	1,135	.04	.02	.00	0.01
3 Tangible primary support	0.88	3,132	.06	.01	.02	-0.05
Tangible secondary support						-0.10
Social support						0.00
4 Losses \times primary	0.51	3,129	.07	.00	.01	-0.78
Losses \times secondary						0.75
Losses \times social						-0.24
Job satisfaction						
1 Job status	0.38	2,136	.01	.00	.01	-0.04
Gender						0.07
2 Losses	7.17**	1,135	.06	.03	.05	-0.23**
3 Tangible primary support	1.04	3,132	.08	.04	.02	0.10
Tangible secondary support						0.14
Social support						-0.14
4 Losses \times primary	0.00	3,129	.08	.02	.00	0.35
Losses \times secondary						-0.33
Losses \times social						0.07
Organizational commitment						
1 Job status	0.34	2,136	.01	.00	.01	-0.02
Gender						0.07
2 Losses	2.07	1,135	.02	.00	.02	-0.12
3 Tangible primary support	0.83	3,132	.04	.00	.02	0.12
Tangible secondary support						0.05
Social support						-0.03

TABLE 3 (continued)

Step/Variable	ΔF	df	R^2	Adjusted R^2	ΔR^2	β
4 Losses \times primary	0.29	3,129	.05	.00	.01	-0.22
Losses \times secondary						-0.34
Losses \times social						0.27
Work tension						
1 Job status	1.79	2,136	.03	.01	.03	0.16
Gender						0.01
2 Losses	2.30	1,135	.04	.02	.02	0.13
3 Tangible primary support	3.68**	3,132	.12	.08	.08	-0.01
Tangible secondary support						0.05
Social support						-0.31**
4 Losses \times primary	1.20	3,129	.14	.08	.02	-1.00
Losses \times secondary						-0.01
Losses \times social						0.35

* $p < .05$ ** $p < .01$

in the subsequent regression analyses (Table 4). Whereas tangible primary support had a main effect on depression, job satisfaction, and organizational commitment, social support affected symptoms, and tangible secondary support affected organizational commitment. Interactions of secondary and social support with hurricane-provoked losses had significant effects on work tension. To interpret these interactions, we separately regressed work tension on low and high values of secondary and social support. An examination of the regression lines for both high and low support groups suggested that there was a buffering effect. Among individuals who suffered severe losses, high-quality support resulted in lower levels of work tension than low-quality support (Figures 1 and 2).

DISCUSSION

Employer-sponsored relief services were expected to reduce employee strains in the 30 days following a natural disaster. Furthermore, we expected employer-sponsored support targeting new stressors emerging throughout the disaster's aftermath to be associated with longitudinal changes in strains measured 90 days after the disaster. Our results provided partial support for both hypotheses. Approximately 30 days after the disaster, tangible primary support was associated with health strains (anxiety and symptoms), and social support was related to work tension. Contrary to our second hypothesis, forms of support other than meeting basic needs had little effect on longitudinal changes in employee strains. An additional unexpected finding was that tangible support targeting urgent postdisaster needs contributed to longitudinal changes in employee depression levels, job satisfaction, and organizational commitment. Evidence of buffering effects of support on disaster-provoked stressors was confined to two interactions concerning tan-

TABLE 4
Results of Hierarchical Regression Analysis for 90-Day Strains

Step/Variable	ΔF	df	R ²	Adjusted R ²	ΔR^2	β
State anxiety						
1 Job status	0.50	2,136	.01	.00	.01	-0.08
Gender						0.04
2 Losses	1.20	1,135	.02	.00	.01	-0.09
3 Tangible primary support	0.67	3,132	.03	.00	.02	-0.05
Tangible secondary support						0.08
Social support						-0.14
4 Losses × primary	1.16	3,129	.06	.00	.03	1.24
Losses × secondary						0.33
Losses × social						-1.38
Symptoms						
1 Job status	3.90*	2,136	.05	.04	.05	-0.24**
Gender						0.02
2 Losses	5.35*	1,135	.09	.07	.04	0.19*
3 Tangible primary support	3.92**	3,132	.16	.13	.07	0.06
Tangible secondary support						0.01
Social support						-0.33**
4 Losses × primary	0.82	3,129	.18	.12	.02	0.69
Losses × secondary						0.29
Losses × social						-1.02
Depression						
1 Job status	1.10	2,136	.02	.00	.02	-0.12
Gender						-0.03
2 Losses	0.93	1,135	.02	.00	.00	0.08
3 Tangible primary support	4.12**	3,132	.11	.07	.08	-0.26*
Tangible secondary support						-0.06
Social support						-0.11
4 Losses × primary	0.76	3,129	.12	.06	.01	0.30
Losses × secondary						0.54
Losses × social						-0.95
Job satisfaction						
1 Job status	0.01	2,136	.01	.00	.01	0.01
Gender						0.07
2 Losses	0.25	1,135	.01	.00	.00	0.04
3 Tangible primary support	3.50**	3,132	.08	.04	.07	0.26*
Tangible secondary support						0.02
Social support						0.07
4 Losses × primary	1.71	3,129	.12	.05	.04	-0.99
Losses × secondary						-0.66
Losses × social						1.60*
Organizational commitment						
1 Job status	2.41	2,136	.03	.02	.03	0.16
Gender						0.07
2 Losses	0.23	1,135	.04	.01	.00	-0.04
3 Tangible primary support	7.12**	3,132	.17	.13	.13	0.38**
Tangible secondary support						0.26*
Social support						0.16

TABLE 4 (continued)

Step/Variable	ΔF	<i>df</i>	<i>R</i> ²	Adjusted <i>R</i> ²	ΔR^2	β
4 Losses × primary	0.47	3,129	.18	.12	.01	-0.75
Losses × secondary						-0.18
Losses × social						0.81
Work tension						
1 Job status	0.84	2,136	.01	.00	.01	0.01
Gender						-0.11
2 Losses	3.34	1,135	.04	.01	.03	-0.16
3 Tangible primary support	1.98	3,132	.08	.04	.04	-0.13
Tangible secondary support						0.13
Social support						-0.19
4 Losses × primary	4.55**	3,129	.17	.11	.09	0.57
Losses × secondary						-1.93**
Losses × social						-2.34**

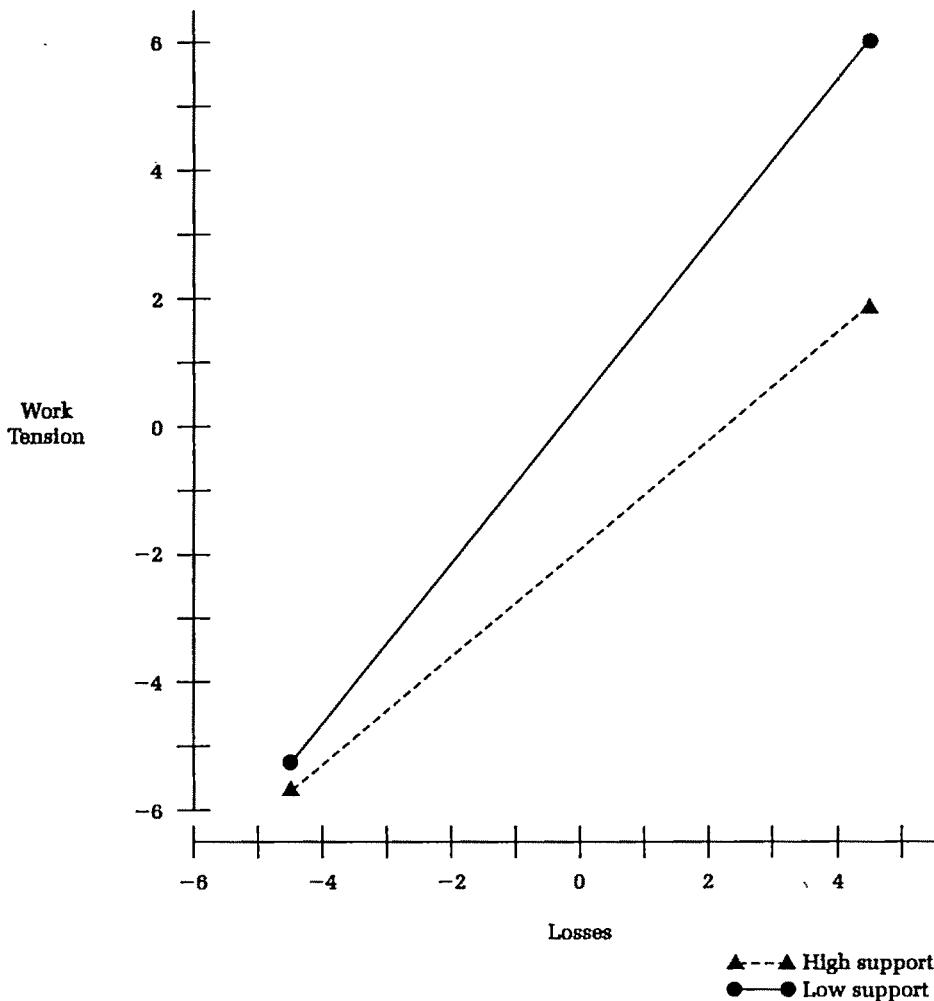
* $p < .05$ ** $p < .01$

gible secondary support and social support when work tension was the strain under consideration.

Although our data generally supported the view that support has a main rather than a buffering effect, the absence of interactions between support and stressors should be interpreted cautiously. First, Aiken and West (1993) pointed out that more than 400 cases may be needed to detect interactions between continuous variables; our statistical power was obviously insufficient for such a purpose. Second, the interactions presented small tolerances (ranging from .07 to .10) in the regression analyses because of correlations among support scales. Third, as the fact that it had few effects on strains suggests, estimated hurricane losses might have been a poor proxy for post-disaster stressors, which might involve other variables, such as family circumstances and socioeconomic status. Conversely, the two interactions found here might be the results of (1) the support scales' lack of total independence from disaster-provoked stressors (Cohen & Wills, 1985) and (2) Type I error inflation resulting from the large number of regression analyses conducted.

The main effects of support on strains evidenced here might be the result of our focus on tangible or instrumental support as opposed to emotional support (Beehr, 1985) and also of the support scales' taking into account quality of support (Ganster et al., 1986). The apparent superiority of primary support over other types of support might be explained by the fact that employees obtained social and secondary support from other sources, such as family and friends, and therefore preferred that their employers provide them with basic help. However, the moderately large correlations among the measures of support precluded unequivocal interpretations of the relative sizes of the effects of different types of corporate support. Future

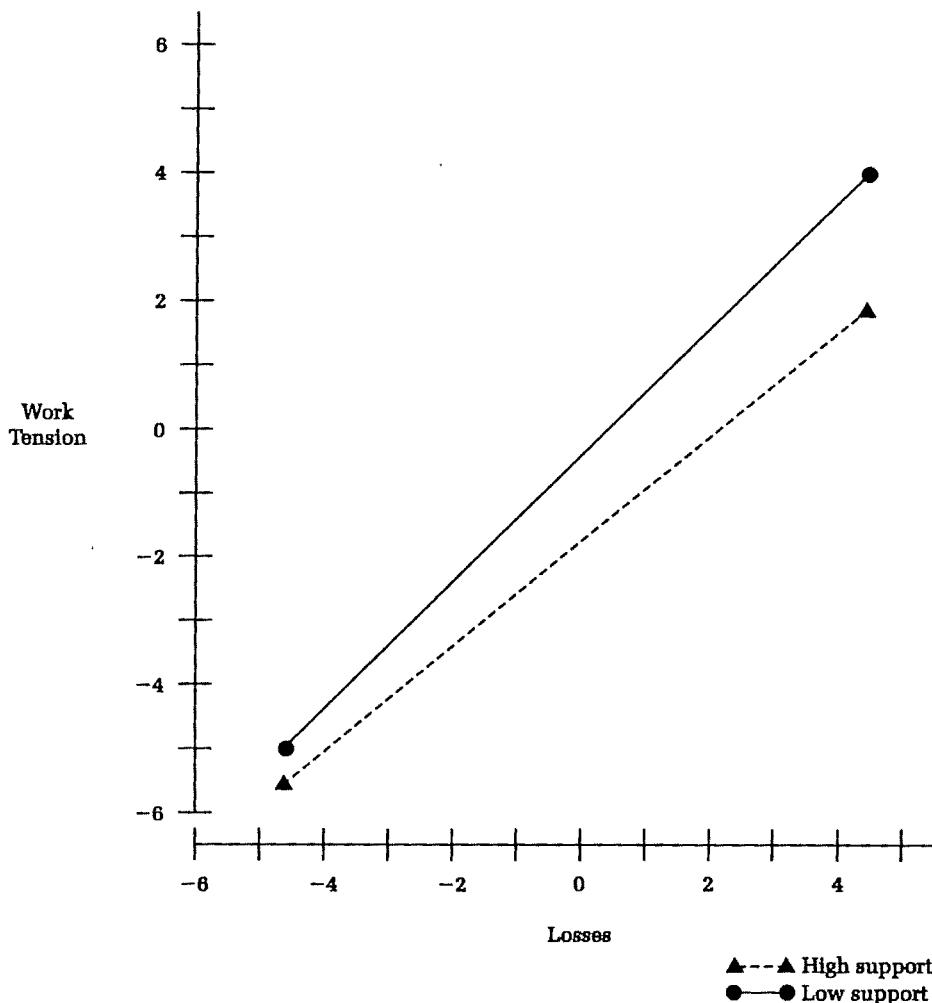
FIGURE 1
High and Low Levels of Tangible Secondary Support



research should examine the relative sizes of tangible and other types of support as a function of the source of support.

Our findings should be appropriately qualified by the limitations inherent in the design. First, our measures of support relied on employees' accounts of the relief services provided by their employers. These reports might not have been fully accurate because unsatisfied employees might be unwilling to recognize employer efforts and satisfied ones might overstate them, which would inflate the correlations between strains and reports of relief operations. Nonetheless, a check performed using the single-factor method indicated that common method variance could not solely account for our results. In addition, our use of employee reports is in line with

FIGURE 2
High and Low Levels of Social Support



theories positing perceived support as key to the effectiveness of social support (Eisenberger et al., 1986). Accounts from multiple sources should be obtained in future research to prevent unwanted common method variance.

Type II errors might be present in the analyses of corporate relief effects on 30-day strains because some support might have been provided after the administration of the 30-day survey (reports of relief services were gathered 90 days after the hurricane). In our study, information about corporate support was not immediately obtained because of the absence of a typology of relief services, a lack that led us to develop an ad hoc typology that future researchers can use to gather timely postdisaster information about corporate support.

The sparse longitudinal changes in strains might be explained by dispositional influences on strain reporting (Nelson & Sutton, 1990), as suggested by the considerable amount of variance in 90-day strain ratings the 30-day measures account for. In general, small effect sizes might also be justified by uncontrolled effects of sources of support other than an employer, such as family, friends, federal and civil defense agencies, and the Red Cross.

In summary, our results suggest that tangible support, especially support aimed at primary postdisaster needs, may help reduce employees' health-related strains. Relief efforts may thus control absenteeism and workers' compensation costs, which should rise when a disaster has affected most of a work force. In addition, according to our data, such basic help may also improve attitudes like organizational commitment in the months following a disaster.

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CORPORATE COMMUNICATIONS: COMPARING EXECUTIVES' PRIVATE AND PUBLIC STATEMENTS

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People frame and make sense of their worlds through the use of cognitive categories, which researchers can only indirectly access. Public corporate statements are easily accessible and comparable across companies and over time, but it is unclear to what extent such statements reflect organization members' cognitive categorizations. This study is the first to directly compare executives' public and private statements to explore whether and along what dimensions public statements reflect internal company communications. Comparisons of internal and external documents generated by the forest products industry over ten years revealed no significant correlations in the two sets of documents between executives' positive or negative evaluations of events and situations; however, the correlations between their perceptions of control were positive and significant.

On the basis of the title and the author of this article, you may already be thinking, "This is likely to be interesting and relevant" or "This is likely to be boring and irrelevant." If you are having such thoughts, you are making a prediction based on categories. All people use cognitive categories to sort and label stimuli so as to simplify and make sense of their surroundings (Rosch, 1978). Sometimes these categories are evaluative or judgmental (interesting/boring); sometimes they are nonevaluative (qualitative/quantitative). In both cases, the cognitive categories filter what people experience as their reality and thus potentially influence their actions and reactions.

Though researchers are increasingly aware of the importance of understanding managerial cognition as a basis for understanding managerial action and subsequent firm performance, there is still little systematic empirical evidence to support many research claims. One reason for this lack is the difficulty of obtaining relevant data. Thoughts are, by definition, unobservable through any direct means. I must infer what you are thinking, if not through your actions, then through your verbal communication. And what you tell me may differ from what you tell someone else. All communications

I gratefully acknowledge the work of Karim Houry and Rocky Turki in coding the documents used in this study. Thanks also to Raymond Zammuto, Peter Bryant, Charles Schwenk, and two anonymous reviewers for their help.

are, at best, uncertain indicators of thoughts and, at worst, completely misleading. A major challenge, then, for researchers investigating managerial cognition is to choose forms of communication that are appropriate to a given research question while understanding the inherent limitations of any form of communication as a source of data. The purpose of this study was to take a first step toward clarifying the dimensions along which external corporate communications reflect the language used inside organizations.

MANAGERS' THOUGHTS

To impose order on ambiguous and often chaotic stimuli, people use general cognitive categories that give meanings to specific issues (Kahneman & Tversky, 1979, 1984; Kiesler & Sproull, 1982). If specific stimuli are inconsistent with the categories they use, people will ignore the stimuli, attending only to those that conform. Cognitive categories shape people's reality by framing what they experience. Such framing affects people's preferences and choices (Tversky & Kahneman, 1981). In a managerial context, cognitive categories are mapping devices that influence how managers act on strategic issues (Fiol & Huff, 1992).

Two of the most salient cognitive categories in organizations are "threat" and "opportunity." Organizations commonly incorporate these terms in formal planning processes, and managers frequently use them in their everyday vocabularies (cf. Dutton & Jackson, 1987; Jackson & Dutton, 1988). Both of these thought categories are future-oriented. Opportunity implies a positive future situation over which one feels a fair amount of control, and threat, a negative future situation over which one feels relatively little control. Previous research provides some evidence that threat/opportunity categorizations are linked to subsequent behaviors. In general, if decision makers perceive an issue as a threat, they will tend to consider fewer alternatives (Staw, Sandelands, & Dutton, 1981) and to conserve resources and impose tight controls to maintain the status quo (Starbuck & Hedberg, 1977). If people perceive an issue as an opportunity, they will, in contrast, tend to take more risks and be more involved in the process of addressing the issue and more committed to outcomes (Dutton, Fahey, & Narayanan, 1983; Dutton & Jackson, 1987).

Recent evidence suggests that the perceptions of controllability and the negative or positive expectations that the labels threat and opportunity imply may be more important in framing people's realities than the labels themselves (Dutton, Walton, & Abrahamson, 1989; Thomas, Clark, & Gioia, 1993). Of these two sets of attributes, perceptions of controllability are the most salient to decision makers (Dutton et al., 1989). Psychological laboratory research has consistently revealed that individuals have a bias toward attributing success on a task to internal factors—those within their control—and toward attributing task failure to external forces, those beyond their control (Shaver, 1970; Weiner, Frieze, Kukla, Reed, Rest, & Rosenbaum, 1972). Several studies have examined the implications for managers of their making sense of events as either controllable or uncontrollable. Hedberg,

Nystrom, and Starbuck (1976) and Fink, Beak, and Taddeo (1971) found that when decision makers attributed downturns to external, uncontrollable causes, they would weather the storm by tinkering with internal conditions but would not focus on their external strategic positions. When decision makers attributed downturns to internal, controllable causes, they would aggressively pursue external strategies.

Thomas, Clark, and Gioia (1993) also found that interpretations of a strategic issue as controllable had a positive effect on product and service changes in a sample of hospitals. In contrast, they found that managers' interpretations of issues as positive or negative had no significant impact on their subsequent actions. Similarly, in a recent study of the perceptions of executives in the forest products and chemical industries (Fiol, 1991), I found no significant links between interpretations of issues as positive or negative and subsequent firm-level investment behaviors. I also noted that the degree of controllability per se reflected in executives' public statements was not associated with changes in investment behaviors. Year-to-year changes in perceived controllability were, however, significantly related to increased subsequent investment, no matter which direction the changes were in. It appears that being jolted out of embedded ways of making sense of or categorizing the world in any way activates behavioral change. This argument supports El Sawy and Pauchant's assertion that "examining the frame of reference shifts can be more informative than examining the frames themselves" (1988: 455).

In sum, the cognitive categories by which people break the world into manageable chunks do appear to affect their subsequent decisions and actions. Threat and opportunity are salient labels that denote such categorization in organizations. Research suggests, however, that these labels may be less important as predictors of future behavior than the cognitive attributes they imply, namely, perceptions of controllability and positive/negative expectations. Of these, perceptions of controllability and changes in perceptions of controllability appear to be both more important to decision makers and more closely linked to future action than interpretations of issues as positive or negative.

MANAGERS' COMMUNICATIONS

How can researchers gain access to managers' interpretations? A number of data sources are available, but none directly reflects thoughts (Stubbart, 1987). All data sources provide secondhand representations of cognitive processes. Organizational researchers must infer cognitions from subjects' behaviors or from the way they communicate their thoughts.

Executives' statements in annual reports are an important medium by which companies communicate with their shareholders, the stock market, and society at large. Numerous researchers have used such statements as sources of data on the cognitive aspects of management (Bettman & Weitz, 1983; Bowman, 1976, 1978, 1984; Fiol, 1989; Salancik & Meindl, 1984; Staw, McKechnie, & Puffer, 1983). Studies have also shown that investors find the

letters from companies' presidents in their annual reports a useful source of information (McConnell, Haslem, & Gibson, 1986). Despite wide use of annual report data in both the academic and investment communities, there continues to be a question about how well such data approximate what managers do or what managers think. Given that the explicit purpose of most corporate public communications is to present a favorable image to external stakeholders, it is reasonable to question whether this data source is of any use for understanding how managers categorize their worlds for themselves inside their organizations.

Research has tested the extent to which the informational content of annual reports reliably measures company practices (Bowman, 1978). For example, Bowman found that the firms deemed "outstandingly responsible" by Business and Society discussed issues of corporate social responsibility more in their annual reports than did neutrally chosen matched companies. The reports appeared to accurately communicate certain current activities of the organizations. What remains less clear is the extent to which they accurately communicated managers' interpretations of their activities and their environments.

Indeed, there is some evidence of bias in how managers communicate their interpretations in statements to external constituencies. Researchers have noted a tendency in external communications to attribute positive outcomes to internal actions and negative outcomes to external factors and chance (Bettman & Weitz, 1984; Salancik & Meindl, 1984; Shaver, 1970; Staw et al., 1983; Weiner et al., 1972). This pattern of attributions suggests either (1) that public corporate communications do not accurately reveal managers' true interpretations or (2) that managers' true interpretations are biased. In any case, the evidence of apparently biased attributions is based on managers' communications about the past. As noted earlier, the potentially important indicators of subsequent decisions and actions are managers' interpretations of the future. If one's aim is to identify the interpretive frames of reference that guide future behaviors, the appropriate focus is on future rather than past attributions.

One relevant source of data on future attributions is the frames of reference that managers develop and communicate in their internal planning processes. Internal planning documents capture top managers' cognitive framing of the future for themselves and others in their organizations. However, such documents are not easily accessible to most researchers. Can future-oriented statements in annual reports serve as proxies for internal planning documents? There are at least two reasons these two sets of messages might convey similar future orientations. The first reason is that both are reactions to the same surrounding events, so attributions may be similar even though they are not inherently related. For example, when industry demand plummets, internal planning processes may address the potential future threat associated with this event. The threat might also be communicated to external stakeholders, though perhaps for very different reasons. The external and internal messages may convey similar future attributions

because they represent independent responses to similar external triggers. The second reason for potential similarity is that the two sets of messages might convey cognitive orientations that are inherently related. That is, if managers perceive their environment as threatening, they may consistently convey this interpretation in both their internal and external communications.

In sum, public statements in annual reports communicate various types of information. Previous research suggests that they accurately report certain current activities. Research also suggests that they give biased reports of some of the causes of past successes and failures. The extent to which public statements in annual reports provide accurate profiles of managers' interpretations of the future is unknown. No research to date has compared inside and outside versions of future-oriented communications.

RESEARCH QUESTIONS

The most direct way to find out whether the interpretations reflected in internal and external future-oriented communications consistently differ is to compare public and private statements made by the same executives. If public and private statements made in the same year reflect very different categories by which future issues are framed, it would appear that executives are, intentionally or not, shaping reality differently for constituencies inside and outside their organizations. Similarity between the two sets of statements, despite their differing audiences, would suggest that public statements are useful proxies for internal communications. Thus, the first question investigated was, Do private and public corporate documents reflect executives' use of similar cognitive categories of threat and opportunity?

In addition to investigating the general question about the similarity of threat and opportunity frames in internal and external messages, this study probed the specific attributions implied by those labels. It focused on the positive/negative and controllability attributions contained in the communications, leading to the following questions: Do private and public corporate documents reflect similar positive or negative attributions for events made by executives, regardless of their control orientation? Do they reflect similar control orientations, regardless of executives' positive or negative attributions?

The first three research questions relate to comparisons of the cognitive frames themselves. This study also examined the possibility that public and private statements reflect similar changes in cognitive categories over time, even though the frames themselves differ. As noted earlier, previous research (El Sawy & Pauchant, 1988; Fiol, 1991) suggested that changes in thought patterns, regardless of their content, are critical aspects of managerial cognition. Thus, the last question investigated was, Do private and public corporate documents reflect similar patterns of variability in executives' categories from year to year?

Finally, the study explored reasons for possible similarities between

cognitive orientations in internal and external documents. As noted earlier, the similarities might be the result of unrelated responses to the same external stimuli or of the inherent relatedness of what is communicated in each document. The former suggests situation-dependent relatedness of the sort that might show up across documents during a major economic downturn. The latter suggests relatedness that exists even after the effects of a particular situation are removed.

METHODS

Data Sources and Variables

To explore the research questions, I compared letters to shareholders contained in annual reports and internal planning documents generated by ten firms in the U.S. forest products industry from 1979 through 1988. The forest products industry was an appropriate target for this study for two reasons. First, it is an industry that, after decades of relative stability, faced a dramatically changed environment in the late 1970s and early 1980s (Sonnenfeld, 1982). A recessionary environment, increasing imports, and changing demand patterns required that these firms move from entrenched and integrated positions in upstream lumber operations toward more differentiated positions in downstream consumer markets. These changes resulted in uncertainty for all industry players. Corporate communication, both internal and external, may have been intensified during this period since corporate executives can use communication to reduce uncertainty for both insiders and outsiders by placing familiar frames around the unknown (Martin, Feldman, Hatch, & Sitkin, 1983).

Second, the forest products industry has traditionally had wide-ranging exposure to multiple publics. Sonnenfeld (1982), in his study of the links between internal organizational structures and the public relations activities of U.S. forest products firms, argued that the leaders of the industry have long had to consciously manage its public image. The industry plays an important role in the nation's economy; it also raises critical environmental concerns that often conflict with economic demands. Public relations efforts have long held a prominent place in the firms' external communications to multiple and often conflicting constituencies. This industry thus provided a reasonable setting in which to explore the extent to which the public statements of an externally oriented industry related to how industry insiders framed their world.

The 30 largest firms in the industry, representing an average 70 percent of industry sales over the 1979–88 period, were initially targeted. Of these, 10 organizations were willing to provide ten years of internal planning documents under conditions of anonymity and confidentiality. The 10 firms, representing about 25 percent of industry sales, were all highly integrated and engaged in activities ranging from upstream lumber operations to downstream specialty products manufacturing.

The study used the letters to shareholders included in the annual cor-

porate reports of the ten companies as the source of external data. Formal internal planning documents were the source of internal data. These two sets of communications both focused on organization-wide experiences and had comparable time frames. The calendar year, the temporal unit of the analysis, is both the most common temporal framework for internal planning in these firms and the trigger for external communication through their annual reports. Thus, the data sources provided appropriate points of comparison (Boyd, Dess, & Rasheed, 1993).

The focus of this study was on how corporate communications were cognitively framed rather than on the specific content of the communications. Consistent with this focus, the variables of interest were cognitive categories rather than specific content issues. The ten firms in the sample faced many similar issues from 1979 to 1988. For example, all the firms faced increasing demand for printing and writing grades of paper in the early and mid-1980s. Both internal and external documents reflected a similar focus on this issue. However, their framing of the issue as representing either an opportunity or a threat differed across companies and over time.

Numerous categories could serve as measures of cognitive framing; examples are whether documents have an internal or an external focus or a task or a people orientation. This study focused on threat and opportunity categorizations because, as noted earlier, they encompass attributions—negative or positive and controllable or noncontrollable—that appear to have a particularly important impact on the subsequent behavior of those making the attributions. Two independent coders coded the documents as follows: They recorded the number of future-oriented sentences and identified those reflecting (1) both positive and internal control attributions, constituting an opportunity orientation on the part of communicators, (2) both negative and external control attributions, constituting a threat orientation, (3) positive attributions without internal control, (4) negative attributions without external control, (5) internal control without positive attributions, and (6) external control without negative attributions. Table 1 illustrates each type of statement with examples taken from internal and external documents included in this study's sample.¹

The proportion of future-oriented sentences containing the attributions described in Table 1 was used to establish the orientation of an entire document. For example, a document in which 70 percent of the future-oriented sentences indicated internal control was compared to documents reflecting different overall proportions of control attributions. I compared entire documents rather than individual sentences in order to focus on the general framing of communications rather than their specific content.

The graphs in Figures 1 and 2 depict aggregate trends of opportunity and

¹ The coders duplicated the coding for ten internal and ten external documents (10 percent of the sample). Interrater reliability was 81 percent for the internal/external control dimension and 94 percent for the positive/negative dimension. The two coders discussed and resolved all disagreements.

TABLE 1
Examples of Attribution Codings

Attributions*	Internal Planning Documents	External Letters to Shareholders
Positive evaluation with internal control	We will be able to achieve "steady state" growth by reinvesting an amount equal to depreciation and depletion in existing assets while maintaining a constant rate of return on the existing assets, and investment of net income in new assets which yield the same constant rate of return.	White and brown paper mills will be in place to take advantage of a growing economy's demand for these basic and important products.
Negative evaluation with external control	Our forecast calls for a recovery slower than those which followed previous recessions, due to the restraining influence of still high interest rates.	Steadily rising cost of materials, labor, and especially energy will put strong pressure on profit margins in all our businesses.
Positive evaluation without internal control	The current recovery will be successful and . . . another major downturn will not occur until 1987.	Demographics point to a healthy market for housing through the decade of the 80s.
Negative evaluation without external control	Funds should be appropriated to avoid significant shutdown or curtailment in the near future.	Prudent management in a down economy—To cope with these adverse circumstances, the company . . . will continue to take prudent action to protect its financial position and still maintain momentum.
Internal control without positive evaluation	We will be investing \$ over the next three years.	

* Statements reflecting external control without a negative evaluation were too uncommon to include in the analysis.

threat orientations over the ten-year period. The vertical axes list the average percentage of future-oriented sentences in the documents across the ten firms that reflected a particular cognitive orientation. The horizontal axes plot time.

The general framing of both internal and external documents over time and the changes in their framing make sense in terms of actual events and conditions in the forest products industry during this period. The graphs show relatively high levels of perceived threats in the late 1970s and early 1980s. They also show relatively low levels of opportunity orientation during the period, especially in the internal documents. The period from 1979 to 1982 was a threatening time for these firms, during which the gross national product dropped by 0.2 percent, industrial production dropped by

FIGURE 1
Portion of Documents Framed in Terms of Threat

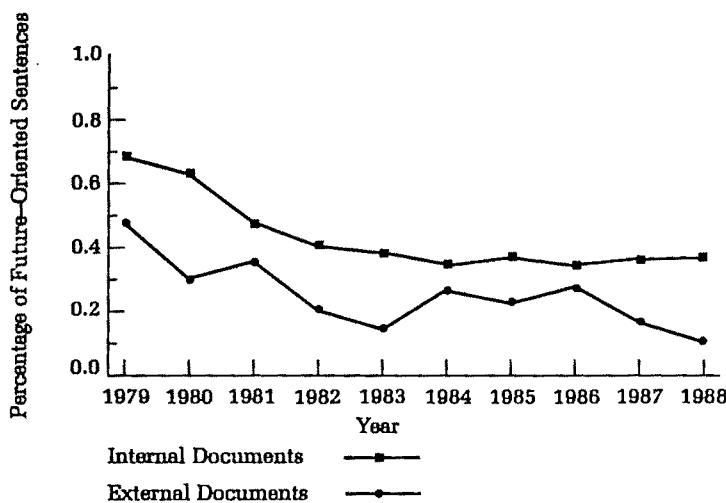
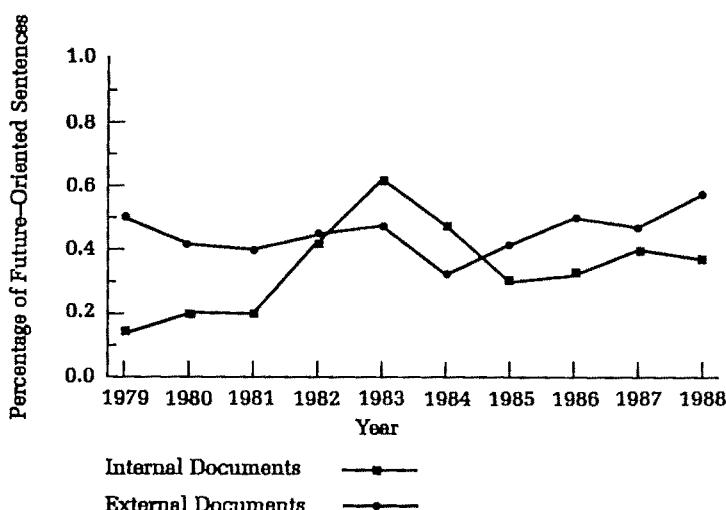


FIGURE 2
Portion of Documents Framed in Terms of Opportunity



9.2 percent, and housing starts were 39 percent lower; moreover, lumber and paper prices were dropping in 1982.

ANALYSIS AND RESULTS

To address the first research question, I compared the proportion of sentences per document reflecting both control and the positive-negative

TABLE 2
Correlations of Categories and Variability in Internal and External Documents^a

Variables	Company and Year	Company and Year	Significance of Company-Year Effects ^b	
	Not Adjusted	Adjusted	Internal	External
Cognitive categories				
Positive with internal control	-.155	-.185		.01
Negative with external control	.331*	.028	.01	
Positive	-.149	.102		.01
Negative	.003	-.166	.01	
Internal control	.733*	.796*		
Year-to-year variability				
Positive with internal control	.134	-.206		
Negative with external control	.044	.055		
Positive	.077	.061		
Negative	.000	-.054		
Internal control	.741*	.767*		

^a For the cognitive categories, $n = 98$; for their variability, $n = 86$. These counts represented the number of firms times the number of years minus missing cases. There were ten firms, ten years of observations, and five cognitive dimensions, leading to 500 observations, minus missing cases.

^b Statistics are F s.

* $p < .01$

attributions constituting threat/opportunity framing over the total number of future-oriented statements.² For example, six of the ten future-oriented sentences in the internal planning document for company A in year one reflect both a sense of internal control and positiveness (an opportunity orientation); this ratio was correlated with the proportion of such sentences in the letter to shareholders for the same firm in the same year. The first two rows in Table 2 show the correlations between threat and opportunity orientations in the internal and external documents. The first column lists correlations unadjusted by the situational effects of company and year; the second column shows correlations adjusted for those effects; the final two columns indicate the level of significance of the situational effects.

The correlations between opportunity orientations (positive with internal control) in the two sets of documents are nonsignificant in both the adjusted and nonadjusted models. For these data, opportunity orientations do not correspond in the internal and external documents even though the

² Use of the absolute number of sentences per document produced similar results.

situational effects of company and year are significant for external communications. In contrast, the correlations in the two sets of documents between threat orientations (negative with external control) are significant in the nonadjusted model; the situational effects are significant for internal messages. When the model is adjusted for these situational effects, the correlations between the threat orientations of the two sets of messages are no longer significant.

To address the second two research questions, I compared the proportion of future-oriented sentences per document reflecting only control attributions and those reflecting only positive/negative attributions of opportunity and threat. For example, two of the ten future-oriented sentences in the internal planning document for company A in year one reflect a sense of internal control with no positive or negative evaluation; this ratio was correlated with the proportion of such sentences in the external letters for the same firm in the same year. The last three rows in the first part of Table 2 show the nonadjusted and adjusted correlations.

The correlations between the positive and negative attributions reflected in the documents are nonsignificant, both with and without the situational effects. In contrast, correlations between the control attributions of the internal and external documents are positive and significant in both cases. Moreover, the situational effects of company and year on control orientations are nonsignificant in both internal and external documents.

Finally, I compared changes in the proportion of future-oriented sentences per document reflecting the different cognitive orientations to address the last research question. For example, two of the ten future-oriented sentences in the internal planning document for company A reflect internal control attributions in year one, four do so in year two, and none do so in year three. The change scores (.2 and .4, respectively) were correlated with the corresponding change scores of letters to shareholders for the same firm over those years. The bottom of Table 2 shows the adjusted and nonadjusted correlations for the change-related variables.

The change patterns in the threat and opportunity orientations of the internal and external documents are not significantly correlated. Also, like the content of the cognitive orientations, the change patterns in the negative and positive attributions of internal and external documents are not significantly correlated. Finally, like the content results, the change patterns in the internal control orientations in the two sets of documents are positively and significantly correlated. The situational effects of company and year are not significant for any of the change patterns.

DISCUSSION AND CONCLUSIONS

All studies using the letters to shareholders contained in annual corporate reports, including this one, have a common limitation. Researchers do not know the authors of these documents and do not know much about the conditions under which they were written. One cannot therefore draw definitive conclusions about any particular company or letter. However, the

aggregate data do suggest possibilities. For example, previous studies have demonstrated the tendency of corporate communicators to attribute positive outcomes to their own actions and negative outcomes to external factors and chance (e.g., Salancik & Meindl, 1984; Staw et al., 1983). Such self-serving patterns of attribution in companies' external messages are sometimes cited to support a major objection to the use of public statements in studying managerial cognition. The lack of significant correlation between most of the cognitive orientations of the documents in this study's sample supports the argument that some public statements may be publicity efforts bearing little resemblance to internal communications.

This study goes beyond that general conclusion in two ways. First, it begins to point to a specific type of cognitive orientation that appears more likely than others to appear in both internal and external documents. The results provide consistent evidence that only the nonevaluative cognitive orientation—Attribution of control—conveyed in the communications studied here was significantly related across the two sets after adjustment for situational effects. When internal documents reflected high levels of communicators' perceived internal control over events without an accompanying evaluation of those events as either positive or negative, external statements also expressed those perceptions. In contrast, the positive/negative orientations of the two sets of documents were not significantly related.

The significant correlations between the control orientations and the changes in control orientations in the two sets of messages allow refinement of the arguments about external and internal documents not communicating the same message. It appears that executives' perceptions of control are similarly reflected in their internal and external communications. If those perceptions are accompanied by a positive or negative evaluation, however, insiders' frames seem to differ from those communicated to outsiders. It may be that the evaluative framing of executives' views of the world represents valuable competitor information that they are reluctant to share with outsiders.

The second contribution of this study is that it begins to explore two possible explanations for the significant relationships that may exist between internal and external cognitive orientations. The significant situational effects of company and year for most of the cognitive dimensions of the study suggest that surrounding events and situations influenced how managers framed their worlds in these messages. The absence of significant correlations in most cases, however, indicates that the situational influences did not lead to similar internal and external cognitive framing. A review of Figure 2 provides an illustration. The internal and external frames of reference appear to move in opposite directions between 1981 and 1983. The internal documents conveyed an increasing sense of opportunity that was not communicated externally. During this period, internal planning processes in these firms shifted from a focus on the recession-plagued upstream lumber operations to the growing downstream pulp and paper segments of the market. The same external situation may have prompted managers to

focus on the new opportunities internally and, at the same time, to withhold information about those opportunities from external audiences because it represented valuable competitive data.

The absence of significant situational effects in the case of the control orientation measured in this study strengthens the finding that this dimension is a potentially useful measure of managers' cognitive orientations regardless of external events and situations. Given that managers' perceptions of control appear to be important predictors of their decisions and actions, this finding opens exciting new possibilities for future research linking cognition and action.

The results of this study encourage researchers to move beyond the broad question of whether one can or cannot use public statements as sources of data for studies of managerial cognition. Some aspects of external statements appear to reflect internal communications more than others. This study's results tentatively indicate that statements containing positive or negative evaluations may be more likely to reflect impression management than nonevaluative statements, particularly in unstable and competitive environments. Executives preparing public statements may first engage in internal communications to develop ways of categorizing their worlds. They may then add or delete evaluative statements as part of a strategy of impression management for external constituencies.

If this scenario is true, future research using public statements to study cognition should focus on the nonevaluative components of communications. Control orientation, the nonevaluative frame used in this study, is just one of many potentially important dimensions of cognition. Other frames might include internal/external orientation, customer orientation, service/product orientation, and past/future orientation. Future research should explore the extent to which other nonevaluative dimensions of cognition follow the patterns uncovered in this study.

The results of the study also suggest the need to distinguish between the components of widely used cognitive labels such as threat and opportunity. Previous research provides substantial evidence that positive attributions and a sense of internal control are associated with an opportunity orientation and that negative attributions and a sense of external control are associated with a threat orientation (Dutton & Jackson, 1987). The control and evaluative attributions are thought to be related in defining threat and opportunity. However, the differences in how executives revealed control and negative/positive orientations in this study's corporate communications suggest that these two sets of attributions may play very different roles when people categorize the world for themselves and for others. Future research should continue to focus on the separate attributions underlying broad cognitive labels rather than on the labels themselves.

Finally, this study was an attempt to move a step closer to answering the question, "Can we believe corporate public communications?" The answer is relevant not only to researchers investigating managerial cognition, but also to industry analysts, competitors, stockholders, and others. The results

of this study suggest that executives' public statements of their positive or negative evaluations of their company's futures may be less believable than nonevaluative forms of communication. However, even the nonevaluative control orientations that were similarly reflected in this study's internal and external messages may have inaccurately portrayed managers' thoughts. One cannot directly know others' thoughts, but finding convergence between different forms of communication increases the chances that one can believe what they say.

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UNDERSTANDING ORGANIZATIONAL CHANGE: A SCHEMATIC PERSPECTIVE

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The construct of change schema is developed and its possible dimensions explained. Using data from two samples and both quantitative and qualitative methods, we found that locus of control and organizational commitment were related to specific dimensions of the construct. Dogmatism was not related in the specific manner hypothesized. Further, the hypothesized role of change schema as a mediator between these individual differences, general attitude toward change, and attitudes toward specific changes was generally supported.

There has been increasing emphasis on understanding the cognitive processes underlying people's responses to organizational change (Bartunek, Lacey, & Wood, 1992). Because an individual's perception and evaluation of the environment are done through the individual's schema (Fiske & Taylor, 1984; Hastie, 1981; Markus & Zajonc, 1985), the concept of schema is receiving attention in this line of research. Because people use schemata to understand and make sense of external events, we can conjecture that they perceive and interpret organizational change via schemata devoted to change. Although a change schema may not be the only cognitive variable that affects attitudinal and behavioral responses toward change, it is nevertheless an important guide for actions. By this observation, we do not mean to imply that only one change schema influences behavior relevant to a given organizational change. Just as multiple attitudes may come into play at a given time, so too may multiple schemata influence behavior. Past studies have focused on the process of schema application, investigating for example, how people use schemata to "enact" their environments and how schemata can be changed (Bartunek et al., 1992; Isabella, 1990; Poole, Gray, & Gioia, 1990). But the construct of change schemata has not been fully explored in the literature. In the current research, we developed several theoretical dimensions of change schemata and tested them with data from two samples using both qualitative and quantitative methodologies. Since the

The authors gratefully acknowledge the comments and valuable assistance of Lynda Kilbourne and this journal's reviewers.

development of change schemata at the individual level is not well understood, we also examined the relationships among those schemata, individual difference variables, and attitudes toward change.

THEORY AND HYPOTHESES

A Schematic Approach to Change

Bartlett (1932) first described schemata as hypothetical mental structures controlling attention and the subsequent reconstruction of memory. We considered a simple definition suggested by Fiske and Taylor as particularly useful for our research: "[A schema is] a cognitive structure that represents organized knowledge about a given concept or type of stimulus. A schema contains both the attributes of the concept and the relationships among the attributes" (1984: 140). This definition encompasses most of the meanings embedded in different conceptualizations of mental structure and has been used in much schema research (Lord, 1985; Taylor & Crocker, 1981; Walsh & Charalambides, 1990). Schemata, so-defined, help people to simplify, effectively manage, and make sense of information in their surrounding environments and guide the cognition, interpretation, and ways of understanding events or objects. In addition, schemata are content-specific (Abelson & Black, 1986). It has been asserted that organization members have schemata for work unit structure, work outcomes, and subordinate effectiveness (Walsh, 1988). By the same token, organization members may have schemata for organizational change, the issue of interest in this study.

Bartunek and Moch (1987) noted that schemata lead people to attend to some aspects of their change experiences and suggest implications of certain actions in an organizational change context. When an organization is undergoing changes, its members have some interpretations of and expectations about these changes. The cognitive understanding of changes is guided by a mental map representing the knowledge structures of change attributes and relationships among different change events. Following Fiske and Taylor (1984), we refer to this mental map as a change schema. For instance, Isabella (1990) identified a set of event-based frames of reference managers used to interpret organizational change and construe realities. These specific frameworks can be understood as change schemata that guide information retrieval and processing.

Three general dimensions of a schema can be identified from the relevant literature: causality, valence, and inferences. In the case of change schemata, these dimensions provide a framework for understanding the antecedents, significance, and consequences of change and can also guide responses to change events (Lau, 1990). In other words, a change schema is a sense-making framework containing organized knowledge of change attributes.

Causality. A schema provides a person with a frame of reference about event sequences and connections between events and people. It provides a

framework for causality in the attribution process whereby people find ways to understand the causes of others' (and their own) behavior or of organizational changes (Ross & Fletcher, 1985). The causality dimension in a change schema provides the knowledge framework explaining why change occurred.

Valence. A second feature of a schema is that it allows a person to evaluate the significance, or valence, of a specific event, person, process, or relationship (Markus & Zajonc, 1985). People can be considered to have "theories" about the valence of events (Abelson & Black, 1986) that imply definition of the event's attributes (which include meaning and significance) in their cognitive structures.

Inferences. Taylor and Crocker (1981) also pointed out that schemata enable a person to predict the future, or make inferences, by specifying the likelihood of the occurrence of events or behaviors. Prediction is possible because a schema contains a network of knowledge about event-outcome relationships enabling a person to know what to expect after the occurrence of a specific event.

The Development of Change Schemata

The development of a schema is based on an individual's past experiences and beliefs (Cantor, 1990; Poole, Gioia, & Gray, 1989; Walsh & Charalambides, 1990). At the individual level, a schema focused on change would logically be influenced by personal dispositional factors related to change. For example, a person's perception of the ability to control change might directly influence the content of a change schema. Openness to new ideas could also contribute to it. In addition, a person's commitment to an organization affects how he or she evaluates a change. Furthermore, a person's general attitude toward change should affect his or her attitude toward a specific change.

Locus of control. Locus of control refers to people's beliefs concerning the source of control over events affecting them (Rotter, 1966). This belief basically affects the causality and inferences dimensions of their schemata. People who strongly believe that the locus of control is internal ("internals") believe that they have control over change events. If they see a reasonable probability of success, they are not afraid of change. Even if high internals attribute changes to external causes, they may still feel able to influence the course of change or feel confident about coping with it. This is not to argue that individuals with a high internal locus of control will never resist change. If, for example, such people thought that a particular change would be detrimental to their organization, they might be more likely to resist the change than would people who considered control over events external, since the former would be more likely to believe that their resistance would be successful. In contrast, "externals" may accept or reject change depending on whether they interpret external forces as sources of success or failure and may feel less capable than internals of coping with changes, regardless of their perceived source.

Dogmatism. Dogmatism defines the extent to which a person's belief system is open or closed (Rokeach, 1960) and relates to receiving, evaluating, and acting on relevant outside information. A highly dogmatic person is rigid and closed-minded and probably has rigid beliefs about objects and event sequences. Therefore, level of dogmatism should be related to how open a person is to change. It is likely that highly dogmatic individuals will have change schemata that reflect rigid beliefs about the value and consequences of change. Therefore, we expected dogmatism to be related to the valence and inferences dimensions of change schemata.

Organizational commitment. Organizational commitment refers to a set of attitudes toward an employing organization. A person committed to an organization accepts its values, is willing to exert effort on its behalf, and wishes to remain in the organization (Mowday, Steers, & Porter, 1979). Therefore, a highly committed individual might more readily identify with and accept organizational change efforts that are perceived as beneficial. By the same token, a highly committed individual might be expected to strongly resist changes judged harmful to the organization. As an attitude, organizational commitment is likely to be related to the valence and inferences dimensions of change schemata.

The above discussion suggests that individual difference variables have varying effects on people's change schemata. Specific directions of these effects could vary across contexts and are not predicted in this exploratory analysis.

Hypothesis 1: Locus of control directly influences the causality and inferences dimensions of a change schema.

Hypothesis 2: Dogmatism directly influences the valence and inferences dimensions of a change schema.

Hypothesis 3: Organizational commitment directly influences the valence and inferences dimensions of a change schema.

Researchers have correlated the individual difference variables identified here with change attitudes (e.g., Dunham, Grube, Gardner, Cummings, & Pierce, 1989). However, to examine only these correlations neglects the operation of change schemata, which contain information about personal expectations and change characteristics. Thus, a more accurate statement is that locus of control, dogmatism, and organizational commitment do not directly influence attitudes toward specific changes. Instead, individual difference variables in part determine what information a person uses or attends to in a schema. Specific attitudes (toward specific changes) are then formed on the basis of the change schema.

Hypothesis 4: A change schema mediates, completely or partly, the influences of locus of control, dogmatism, and organizational commitment on attitudes toward specific changes.

General attitude toward change. It is important to separate general attitudes from specific attitudes (Fisher, 1980). A person may have a general attitude or orientation toward change but at the same time possess different attitudes about specific changes. Dunham and colleagues (1989) proposed that people manifest an overall attitude toward change with different strengths, depending on the specific issues and contexts involved. For example, they can be generally supportive of the overall thrust of an organizational change program yet vary in their enthusiasm about specific changes being undertaken. Since a change schema guides evaluation of a context and making predictions, it helps an individual to assess change issues and to form specific attitudes toward a specific change.

Hypothesis 5: A change schema mediates the relationship between a general attitude toward change and attitudes toward specific changes.

METHODS

Quantitative data from survey questionnaires and qualitative data gathered through content analysis of interviews and semistructured questions were used to develop the change schema construct and examine how change schemata are related to the proposed individual difference variables. Jick's (1979) idea of multimethod triangulation and Woodman's (1989) arguments for "combined paradigm" research guided the design of the research.

Samples and Procedures

A large public university in the Southwest was used as the research site. This university is widely regarded as one with a strong tradition and culture. Data were collected concurrently from two samples: undergraduates and members of the staff of the university's human resources department. We chose these groups because the students were directly involved in many changes on campus and the department was undergoing a number of changes, including new leadership and new responsibilities.

A total of 331 students enrolled in a junior-level survey-of-management course were included in the study. We surveyed 305 of these students to collect the required quantitative data. The remaining 26 students, randomly chosen from the sample, were assigned to small group discussions for the collection of qualitative data. Data from these two subsamples were collected concurrently. A scenario describing a potential change in an important tradition of the university was used in the student questionnaire and discussions: A massive bonfire and pep rally traditionally held just before the annual football game with a rival university had in recent years become quite controversial. Those supporting the bonfire practice viewed it as a valuable symbol of the school's spirit and traditions. Those opposed regarded it as an anachronism that was both unsafe and a waste of resources. The debate had evoked strong feelings. Indeed, in an earlier pilot study using focus groups, students chose this issue from a list of potential changes as the

most important. Survey respondents were asked to reflect on this change, consider its impacts, and then answer a structured questionnaire. Participants in the discussions were asked to rapidly write down what came to their minds when they encountered this change. The generation of individual ideas was followed by an open-ended group discussion. The purpose of these small group discussions was to provide richer information about students' change schemata using a method other than a survey.

The human resources department investigation started with an interview with the director, who helped identify all relevant changes in the department. The next step was conducting interviews with 15 staff members from different levels of the department, including all managers. The interviews focused on the staff members' perceptions of changes, mainly in relationship to the department's direction and working philosophy, and how they developed those perceptions. Two independent raters who had graduate research training content analyzed the interview data.

The staff sample provided field data collected from a real organizational work setting as a contrast to data obtained from a student survey. The two samples represented different constituents of the university and were in different change contexts. In addition, using data from both sources not only allowed a triangulation of the change schema construct, but also allowed for greater confidence in its generalizability.

Measures

The construct of change schema was measured in the student sample by an instrument with items drawn from the organizational change literature. These items described various types of perceptions, thoughts, and feelings that people may have when encountering organizational change. After several pilot tests with other student samples and subsequent revisions (cf. Lau, 1990) had occurred, a 30-item scale emerged and was used in the current study. (Details on scale development appear in Results, and items appear in the Appendix.) The general attitude toward change was measured by Dunham and colleagues' (1989) 15-item instrument. An alpha coefficient of .90 was found in the student sample.¹ Attitude toward specific change was measured by a scale developed by Lau (1990) (see the Appendix), having eight items and a coefficient alpha of .88.

Locus of control was measured by the Internal-External Locus of Control Scale (Rotter, 1966), a 23-item forced choice instrument that has been used in many studies ($\alpha = .69$). Dogmatism was measured by Rokeach's (1960) Dogmatism Scale Form E, a 40-item measure using a seven-point Likert format for responses ($\alpha = .86$). Organizational commitment was assessed by Mowday and colleagues' (1979) Organizational Commitment Questionnaire (OCQ), consisting of 15 items rated on a seven-point Likert format ($\alpha = .86$).

¹ All alphas subsequently given in this section are for that group.

RESULTS

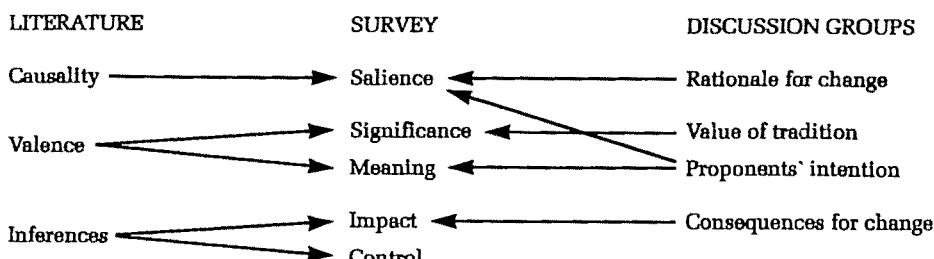
Change Schemata of the Undergraduate Sample

To establish construct validity, we factor-analyzed the 30-item change schema measure and tested it using Bentler's (1989) EQS method of structural equations modeling to see if the theoretical dimensions were present. Computed on the basis of goodness-of-fit indexes and subsequent deletion of ambiguous and unrelated items, the final change schema measurement model had five factors with a total of 17 items. The coefficient alphas of these dimensions ranged from .60 to .81. Because the change schema was not directly measured, we considered it a latent construct represented by the five dimensions, which in turn were measured by the 17-item scale. Results indicated that the hypothesized relationships were satisfactory. Test statistics indicating model goodness of fit were a chi-square of 182.34 (115 df, $p < .01$), a Bentler-Bonett normed fit index (NFI) of .876, a Bentler-Bonett nonnormed fit index (NNFI) of .940, and a comparative fit index (CFI) of .949. The path coefficients between change schema and schema dimensions were also significant.

These five schema dimensions were named as follows: (1) Impact of change on current practice (impact), (2) intensity and significance of change process (significance), (3) the meaning of change (meaning), (4) the salience of change (salience), and (5) personal control over change (control). These dimensions generally capture the three dimensions found in the literature, as Figure 1 illustrates. The impact and control factors are similar to the inferences dimension. The significance and meaning factors can be related to the valence dimension. The salience factor is related to the causality dimension. Thus, the theoretical dimensions derived from the literature were present in this empirical test, but the inferences and valence dimensions were each broken down into two subdimensions.

To triangulate the results of the quantitative survey, we content-analyzed the data from small group discussions. Complementary change schema dimensions were obtained from participants' personal reflections on the change encountered. Frequently mentioned themes included the value

FIGURE 1
Relationships Between Generally Accepted and Empirically Derived Dimensions of Change Schema



of tradition, the rationale for change, the intentions of change proponents, and the consequences of change. These four themes represented 69 percent of the themes identified. The value of tradition was mentioned most frequently, with the students affirming the role and importance of the bonfire. This theme closely parallels the significance dimension of the quantitative study. The next most frequently mentioned themes were the rationale for change and the proponents' intentions. Many opponents of this change argued that its advocates' reasons were not sufficient to warrant a change in a respected tradition, and many students were also concerned about the intentions and motivations of the proponents of the change. These two themes are very similar to the salience and meaning dimensions. The fourth theme, centering on worries about the consequences of change, can be related to the impact of change dimension. Thus, we saw close parallels between the theoretical dimensions and the dimensions obtained from the undergraduate sample using both quantitative and qualitative methods. These analyses support the notion that certain dimensions are common in change schemata.

Individual Difference Effects

Table 1 shows the means, standard deviations, and correlations of all measured variables. Figure 2 presents a model of the relationships between individual difference variables, general attitude toward change, change schema, and attitude toward specific change. Table 2 shows the path coefficients of the individual difference variables on change schema dimensions.

The overall model fit test statistics ($NNFI = .876$, $CFI = .897$) indicated the model was acceptable (Bollen, 1989). We analyzed both direct and indirect effects of the individual difference variables on change schema dimensions. (Complete results of the model are available from the authors.) Locus of control had significant, direct effects on each change schema dimension except the control factor. This result generally supports Hypothesis 1, predicting that locus of control directly influences the causality (salience) and inferences (impact) dimensions of a change schema. Moreover, locus of control also has effects on the valence (significance and meaning) dimension. However, a person's general belief regarding control over the future did not necessarily fall in line with the belief about control over the specific issue.

The direct effect of dogmatism on change schema dimensions was not significant. Thus, Hypothesis 2 was not supported. Organizational commitment had significant, direct effects on the impact and control dimensions, but the effects on the significance and meaning dimensions were only significant at the .10 level. Thus, Hypothesis 3 was partially confirmed. The above results generally suggest that locus of control and organizational commitment have effects on the schema dimensions as predicted in the hypotheses, although these effects were more consistent for locus of control than for commitment.

Regarding Hypotheses 4 and 5, the paths from locus of control and organizational commitment to change schema and between change schema

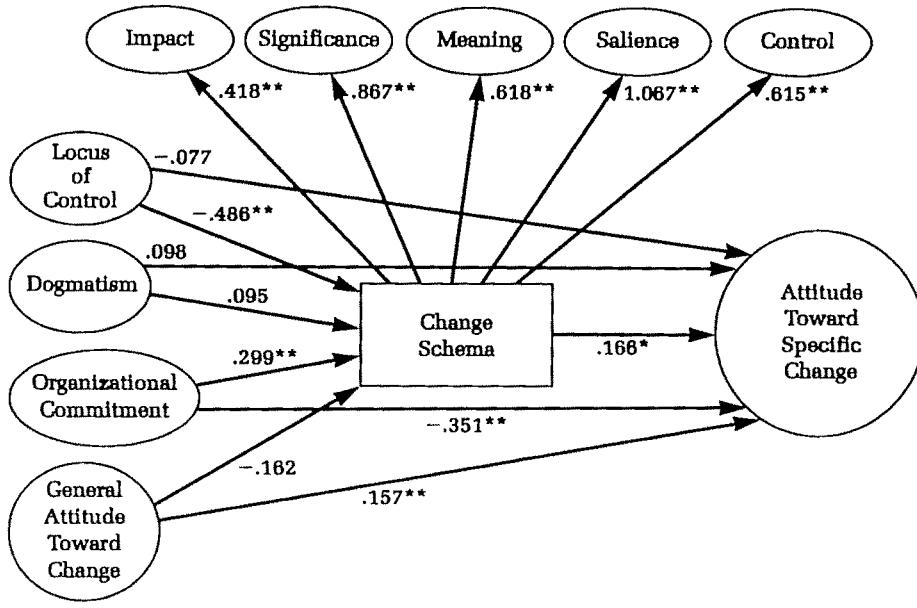
TABLE 1
Means, Standard Deviations, and Correlations, Student Sample^a

Variables	Means	s.d.	1	2	3	4	5	6	7	8	9	10
Schema dimensions												
1. Impact	5.16	1.12	(.81)									
2. Significance	4.91	1.15	.50**	(.80)								
3. Meaning	2.79	0.88	-.11	-.12*	(.60)							
4. Salience	4.15	0.91	.49**	.54**	.01	(.81)						
5. Control	4.64	1.22	.49**	.59**	-.02	.80**	(.69)					
Other variables												
6. Locus of control	0.45	0.17	-.06	-.10	-.03	-.12*	-.15**	(.89)				
7. Dogmatism	3.73	0.64	-.11	-.01	-.13*	.01	-.11	.11	(.86)			
8. Organizational commitment	5.56	0.84	.21**	.38**	-.15**	.14*	.23**	-.19**	.02	(.86)		
9. General attitude toward change	4.79	0.71	-.01	-.01	.15*	.02	.10	-.14*	-.07	.03	(.90)	
10. Attitude toward specific change	4.95	0.60	-.08	-.26**	.35**	-.07	-.05	.03	-.03	-.43**	.13*	(.88)

^a N = 305; alpha reliabilities are shown on the diagonal.

* p < .05
** p < .01

FIGURE 2
Effects of Individual Difference Variables and General Attitude Toward Change on Change Schema and Specific Attitude



* $p < .05$

** $p < .01$

TABLE 2
Path Coefficients of Individual Difference Variables on Change Schema Dimensions

	Salience	Significance	Meaning	Impact	Control
Locus of control	.396**	.446**	.302**	.166*	.158†
Dogmatism	.078	.048	.061	.034	.039
Organizational commitment	-.001	.324†	.168†	-.351**	-.178*

† $p < .10$

* $p < .05$

** $p < .01$

and specific attitude toward change were significant. In addition, the direct path from locus of control to attitude toward specific change was not significant, whereas the path from commitment to specific attitude was significant. Thus, we can say that change schema completely mediates locus of control and specific attitude and partially mediates organizational commitment and specific attitude (James & Brett, 1984). Change schema's mediation of the relationship between locus of control and organizational commitment and specific attitude was confirmed. However, the paths from dogmatism

and general attitude to change schema were not significant. Thus, a mediating role of change schema was not found for these variables. Although not hypothesized, general attitude had a significant, direct path to specific attitude. In sum, we can describe Hypothesis 4 as partially supported. Findings do not support Hypothesis 5.

Human Resources Department Sample

The interviews followed a semistructured format and averaged 25 minutes each. Interviewees were asked to talk about any departmental change they had experienced in the past two years, characterize the change, and describe their feelings toward it. All interviews were tape-recorded and transcribed. Two independent raters content-analyzed the transcribed script of each interview using a structured form having three-point scales to indicate the extent to which each aspect of change was mentioned during the interview. They also rated the individual difference and attitude variables using three-point scales. Unlike the students, the staff interviewees were not asked to respond to psychometric scales. The average correlation coefficient of the ratings given by the two raters for each of the 15 interviewees was .49. Since the sample was so small, a nonparametric test of agreement was needed. The z-value of a Wilcoxon matched-pairs signed ranks test was 1.25 ($p = .21$), indicating that the ratings of the two raters on each of the questions were not significantly unequal. Interrater reliability was thus acceptable, considering the small sample and the qualitative nature of the raw data. The first author reconciled all discrepancies in coding.

The analytic approach here is consistent with the objective of qualitative research in the sense that a qualitative study is designed to identify the presence or absence of certain phenomena rather than to assess the magnitude of the phenomena, as does a quantitative approach (Kirk & Miller, 1986). Our focus was identifying the change schema dimensions previously found with the student sample in order to further explore the validity of the construct.

From a simple count of the frequency of occurrence of each dimension, we found that the interviewees mentioned the impact and salience dimensions most often, and a chi-square test indicated real differences in the frequency with which dimensions were mentioned ($\chi^2 = 40.93$, $p < .01$). Nearly half the interviewees perceived that current and future changes in the department's direction and working philosophy were directly linked to the present way of doing things. They were skeptical about change and concerned about its outcomes. For instance, some interviewees commented that changes often resulted in additional work, fluctuation of work programs, and changes in their relationships with their managers. Their concern seemed to be focused on the outcome and consequences of change rather than on its significance and meaning. Further, what the change meant to the university was not the primary concern of most staff members. Rather, they were more concerned with the personal impact of proposed changes. The control dimension was the least mentioned.

Besides these dimensions, stress derived from change was mentioned. For example, one interviewee said, "I think a lot of managers felt stressed and uncertain, and wondered what will happen." Some staff members expressed a sense of helplessness during interviews and indicated that a mood of uncertainty hindered the current operation. Unlike the students, the staff members were not facing a one-time change in a tradition but changes in their work that placed them under a great deal of perceived pressure.

Table 3 shows results of a simple Spearman rank-order correlation analysis comparing the schema dimensions and the personal characteristics of interviewees. Since the correlational data were based on values provided by raters and not well-supported scales, these significant correlations indicate potential associations only and must be viewed cautiously.

Attitude toward a specific change was associated with four of the five schema dimensions, with control the exception, whereas general attitude toward change had only two significant correlations. This pattern is consistent with our original assertion that change schemata reflect specific attitudes better than general attitudes, although general attitude and specific attitude were significantly correlated at .421 ($p = .022$). Feeling of control over the future (locus of control) had associations with perception of the impact of change, the salience of change, and personal control over the consequences of change. Dogmatism was associated with the impact, significance, salience, and control dimensions. Thus, these data supported Hypotheses 1 and 2, predicting that locus of control would affect the causality and inference aspects of change schemata and that dogmatism affects the valence and inferences dimensions. Organizational commitment was only correlated with the meaning of change, lending partial support to Hypothesis 3.

In summary, both studies generally confirmed the hypothesized effects of individual difference variables on change schema dimensions, with the exception of dogmatism in the student sample. However, dogmatism was significantly correlated with some schema dimensions in the human re-

TABLE 3
Spearman Correlations, Staff Sample^a

Variables	Schema Dimensions				
	Salience	Significance	Meaning	Impact	Control
General attitude toward change	.334	-.039	.382*	.421*	.339
Attitude toward specific change	.433*	.461*	.682**	.486**	.179
Locus of control	.425*	.297	.236	.546**	.530**
Dogmatism	.385*	.457*	.334	.495**	.477**
Organizational commitment	.044	.292	.410*	.128	.152

* $N = 15$.

* $p < .05$

** $p < .01$

sources department sample, although it is not possible to have as much confidence in these results as in those of the quantitative analysis from the larger sample. The differences in dogmatism's effects on the two samples could be a result of the different nature of the two change contexts. The mediating role of change schema was partially supported. The student data confirmed that change schema mediated the attitude effects of locus of control and organizational commitment but not dogmatism and general attitude.

DISCUSSION AND CONCLUSIONS

Summary of Findings

The results of the present study provided support for the assertion that an individual's attitude toward change is an outcome of a cognitive understanding of change guided by the person's change schema. Data suggest that a change schema is a critical unit in organizing and integrating information to arrive at a specific attitude toward change. This research enabled us to begin to understand how people evaluate changes. When a person faces change, various attributes of the change and their relationships are brought to mind. These key attributes help to define the problem and give meaning to the change issue. With this meaning in mind, the individual forms a specific attitude toward the change.

Specifically, the present study identified several important dimensions of change schemata central to the understanding of change. From both samples, the empirical dimensions found in respondents' schemata about organizational change are, in general, consistent with the theoretical dimensions (causality, valence, and inferences) of a schema identified in the literature. However, some dimensions were more salient in one change context than in the other. A new dimension, stress from change, also emerged from the qualitative staff data. Since all the staff respondents were full-time employees of the organization, they were sensitive to what the change would bring about in the workplace. Because their daily work depended on how change was carried out and what it led to, stress was present. A change in university tradition was not related to the students' daily work, so the impact of the change was not so immediate. It is important to note other differences in the two samples. For example, the students were responding to what many of them perceived as a negative change in a revered tradition. The staff members were working in a more positive change context. Despite differences in the two groups yielding differences in schemata, however, there are enough similarities to suggest that the theoretical dimensions derived from earlier research have reasonable generalizability. More specifically, the empirically derived dimensions in our study, which can be meaningfully related to a widely accepted theoretical model, seem promising for further research, though they are not yet comprehensive.

Theorists have suggested that locus of control, dogmatism, organizational commitment, and other individual differences can contribute to predictions about a person's specific attitude toward specific changes (e.g., Dun-

ham et al., 1989). This study suggests that not all of these personal variables have direct influences on attitudes toward specific change. For example, we found that locus of control and organizational commitment were mediated by change schema. However, the role of dogmatism is not clear. In the student sample's quantitative data, change schema does not appear to mediate the relationship between dogmatism and attitude toward specific change. In the staff sample, dogmatism was related to some schema dimensions. The influences of dogmatism on schemata and attitudes have to be further explored. General attitude toward change, however, had a direct effect on specific attitudes. The quantitative analysis did not support the notion that a change schema mediates a general attitude toward change to influence attitudes toward a specific change.

Limitations

Construct validity is critical to the building of theory (Bacharach, 1989). We used a multimethod multisample approach to establish the construct validity of this measure of change schemata through the assessment of convergence. The assessment was satisfactory, which indicated that there was convergence among the methods and techniques. Empirically, the study used structural equations in combination with factor analysis in an attempt to establish the construct. The results of EQS modeling were positive. Further, the measurement strategy has face validity since the dimensions identified are consistent with discussions in the organizations literature. Although the tests of discriminant and predictive validity were more limited than the demonstration of convergence, results from hypothesis testing provide some evidence of validity in that we found many expected relationships among these hypothetical constructs. In addition, the current study demonstrated that the change schema construct is different from a general attitude toward change and attitude toward specific change. Given the current level of development of change schema concepts, the present study is a step forward in explaining the change schema construct and demonstrates that a cognitive approach to studying organizational change is feasible.

Some limitations stem from the nature of modeling. Any model is an abstraction from reality, and researchers must make difficult choices as to what should be included and what should be left out. Here, we chose to ignore context in favor of exploring relationships among individual differences and schema dimensions and to examine the mediating role of change schema in attitude formation. Behavior is always a function of both person and situation, and the role of contextual variables in schema formation, functioning, and change certainly represents an important arena for future theorizing and research.

A limitation concerning causality should be mentioned. Somewhat indirect assessments of causal relationships, such as the structural equation modeling used here, are always less compelling than direct, experimental manipulations of independent variables followed by the application of statistical inference approaches developed for the analysis of true experimental

designs, such as analysis of variance. In this research, of course, we dealt with hypothetical constructs designed to help researchers understand certain cognitive aspects of the mind. As such, the direct manipulation of the variables of interest was impossible, and we were left with less rigorous statistical approaches. The development of change schemata explored here and the subsequent demonstration of predicted path linkages seems promising, but we strongly recommend replication.

The core dimensions identified in the change schema represent the important characteristics of a change issue that people will focus on when facing change. A change schema (1) provides a framework of causality (the causality dimension), (2) allows evaluation of change events (the valence dimension), and (3) enables an individual to make inferences and plan future actions (the inferences dimension). With the help of a change schema, it is possible to examine individuals' current change orientation and their attitudes and expectations about future change. It would also be feasible for managers to gauge subordinates' responses and predict what change might lead to. Possibly, resistance to change could be identified beforehand.

This study supports the argument that a cognitive approach has value in organizational change and development research. In an era of highly turbulent environments, managers must create and maintain organizational assumptions and practices that address continual change. Overall realignment of a whole organization, which necessitates changing the organization's frames of reference (Nadler & Tushman, 1989), is often needed. Such activity requires understanding organization members' cognitions. The cognitive approach to organizational change may be a major focus in future theory development and management practice.

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APPENDIX

Original Scales, Student Sample

Specific Attitude Toward Change

I think the change of bonfire tradition is excellent.
If I can, I will do my best to help this happen.
Nothing is worse than this.
I enjoy changes like this.
I believe the University administration has done a great job in bringing about this change.
I don't want to be involved in this change.^a
Everyone should support this change.
I don't want to see this change happen.^a

Change Schema

Factor 1: Impact of change on current practice ($\alpha = .81$)

This change has important consequences for my future at this school.
This change alters my way of doing things.
This change affects the way we (I and my classmates) do things here.

Factor 2: Intensity and significance of change process ($\alpha = .80$)

I am concerned with the issues behind this change.
I am concerned with how the change will be carried out.
I would like to know how likely the consequences are to occur.
I am concerned with the risks involved in carrying out this change.

Factor 3: The meaning of change ($\alpha = .60$)

This change is meaningful.
This change communicates a lot of messages to me.
This change tells me something about this school.

Factor 4: The salience of change ($\alpha = .61$)

I have a good understanding of the impact of this change on me.
I know the relationships between this change and other events on campus.
The change consequences are predictable.
I have some expectations about this change.

Factor 5: Personal control over change ($\alpha = .69$)

I can be involved in the process of change.
I have some say in the change.
I have some control over the change.

^a Item was reverse-coded.

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A TYPOLOGY OF DEVANT WORKPLACE BEHAVIORS: A MULTIDIMENSIONAL SCALING STUDY

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In this study, we developed a typology of deviant workplace behaviors using multidimensional scaling techniques. Results suggest that deviant workplace behaviors vary along two dimensions: minor versus serious, and interpersonal versus organizational. On the basis of these two dimensions, employee deviance appears to fall into four distinct categories: production deviance, property deviance, political deviance, and personal aggression. Theoretical and empirical implications are discussed.

Had I a hundred tongues, a hundred mouths, a voice of iron and a chest of brass, I could not tell all the forms of crime.

Virgil, *Aeneid*

Employee deviance and delinquency produce organizational losses estimated to range from \$6 to \$200 billion annually (Murphy, 1993). Of all employees, 33 to 75 percent have engaged in some of the following behaviors: theft, computer fraud, embezzlement, vandalism, sabotage, and absenteeism (Harper, 1990). Almost daily, there are media reports of workplace deviance, whether it be corruption among police officers, violence in the post office, or illegal activity on Wall Street.

The prevalence of workplace deviance and its associated organizational costs necessitates a specific, systematic, theoretically focused program of study into this behavior. To date, relatively little empirical research has directly addressed the darker side of employee behavior (Vardi & Wiener, 1992). The organization behavior literature has shown a disproportionate emphasis on desirable phenomena such as organizational citizenship behavior (e.g., Organ, 1988), commitment (e.g., Mowday, Porter, & Steers, 1982), and adaptation (e.g., Hulin, 1991).

An Academic Challenge Grant from the University of Toledo supported this study. We gratefully acknowledge the assistance of Daniel Lopuch and Timothy Murphy. We also thank Karen Jehn, for her advice and assistance during the various stages of the project, and Blake Ashforth, Aela Boyum, Defna Eylon, Daniel Farrell, and Elizabeth Morrison, for their comments on earlier drafts of this article.

Some research has addressed behaviors that could be considered deviant, although they have not been conceptualized as such: absenteeism (e.g., Goodman & Atkins, 1984), withdrawal (e.g., Gupta & Jenkins, 1980), withholding effort (e.g., Kidwell & Bennett, 1993), and behaviors that lead to procedural or distributive injustice or both (e.g., Sheppard, Lewicki, & Minton, 1992). However, these research efforts have not focused on the deviant nature of the behaviors themselves. Thus, although such research may examine the same behaviors as the study of employee deviance and be useful for understanding it, workplace deviance needs to be examined as a distinct and important organizational phenomenon in its own right.

Of the few studies examining workplace deviance, most have been isolated attempts to answer specific questions about particular types of deviant acts. For example, studies have looked exclusively at theft (Greenberg, 1990, 1993; Hollinger & Clark, 1982), sexual harassment (Gutek, 1985), and unethical decision making (Trevino & Youngblood, 1990). Researchers have yet to develop a comprehensive theory or set of theories regarding workplace deviance. For empirical work to advance an area of knowledge, studies that build upon one another are needed (Robertson, 1993). The development of employee deviance theories will direct the currently scattered research efforts and enable researchers to establish complementary research agendas. In sum, a systematic, theory-directed study of deviance will ultimately increase understanding of workplace deviance.

WORKPLACE DEVIANCE

Definition

Employee deviance is defined here as voluntary behavior that violates significant organizational norms and in so doing threatens the well-being of an organization, its members, or both. Employee deviance is voluntary in that employees either lack the motivation to conform to normative expectations of the social context or become motivated to violate those expectations (Kaplan, 1975). Organizational norms, or those prescribed by formal and informal organizational policies, rules, and procedures, are specified here because deviance must be defined in terms of the standards of a specified social group rather than in reference to a system of absolute moral standards (Kaplan, 1975). We focused on the violation of norms espoused by the dominant administrative coalitions of organizations rather than the norms of work groups or subcultures.

The study of workplace deviance is distinct from the study of ethics in that the former focuses on behavior that violates organizational norms, whereas the latter focuses on behavior that is right or wrong when judged in terms of justice, law, or other societal guidelines determining the morality of behavior (Lewis, 1985). Thus, although a particular behavior can be both deviant and unethical, the two qualities are not inevitably linked. For example, dumping toxic waste in a river is not deviant if it conforms with the policies of one's organization. However, most people would probably agree

that this act is unethical. Conversely, reporting this dumping to authorities may be an ethical act, but it would also be a deviant act in this particular example if it violated organizational norms.

Deviant behavior also has the potential to harm an organization, its members, or both. The term deviant is usually reserved for acts that violate significant norms (Cohen, 1966) and result in an "unacceptable violation . . . believed to threaten society's well-being" (Best & Luckenbill, 1982: 4). Consistent with this focus, our definition of workplace deviance focuses on violations of norms that threaten the well-being of an organization. Hence, employee deviance excludes minor infractions of social norms, such as wearing a suit of the wrong style to the office, that are not usually or directly harmful to most organizations.¹

A Typology

A typology of employee deviance is a useful starting point for developing a systematic, theory-based study of employee deviance. We saw such a typology as enabling us to develop broader, more comprehensive theories of deviance (Rich, 1992) and as giving parsimony and order to the diverse set of behaviors that comprise workplace deviance, helping us to identify the relationships between these different deviant behaviors, and enabling us to make connections between the different findings of studies that have addressed specific types of deviant behavior. We also viewed a typology as useful for developing broader measures of employee deviance and thus as enabling empirical tests of our theories of deviance. Aggregated measures are more reliable and valid than specific measures (Rushton, Brainerd, & Pressley, 1983) and also overcome the low base rate problems commonly associated with measuring deviant behaviors (Hulin & Rousseau, 1980).

Few attempts have been made to classify employee deviance. Redeker (1989) developed a list of punishable offenses in organizations but did not integrate the different behaviors into any meaningful pattern. Wheeler (1976), examining how arbitrators should punish rule-breaking behavior, classified forms of organizational rule-breaking into serious offenses and nonserious offenses. Hollinger and Clark (1982) categorized employee deviance into property deviance, or acquiring or damaging property belonging to one's employer, and production deviance, or violating organizational norms regarding the quantity and quality of work performed. Mangione and Quinn (1974) suggested two similar categories of deviance: counterproductive behavior, defined as purposely damaging employers' property, and doing little, defined as producing output of poor quality or low quantity.

These categorical schemes of workplace deviance provide a useful starting point for creating an integrative framework of deviant behaviors. How-

¹ It should be noted that although many behaviors might meet one of our definitional criteria, we focused only on behaviors that met all three criteria and were likely to be deviant in most organizational contexts.

ever, these typologies also raise several questions. First, are the typologies comprehensive? They capture acts against organizations, such as theft and slowed production, but they do not seem to be able to account for deviant acts of an interpersonal nature, such as physical aggression and sexual harassment. An accurate typology of employee deviance should take into account not only behavior directed at organizations, but also that directed at individuals. Second, how are the different deviant behaviors, or the categories themselves, related to one another? It would be useful to have a typology that identified the dimensions underlying these categories. And finally, are the typologies valid? Although it is quite conceivable that these typologies are all somewhat accurate classifications of employee deviance, they were not inductively or empirically derived and have not yet been empirically tested.

In this study, we sought to answer the above questions by developing an inductively and empirically derived typology of workplace deviance using multidimensional scaling (MDS) techniques (Kruskal & Wish, 1978). The product was intended to be a comprehensive classification of deviant behaviors highlighting the similarities and differences between deviant behaviors as well as their underlying dimensions.

METHODS AND RESULTS

Multidimensional scaling is a useful tool for producing inductive, but empirically derived, typologies. MDS techniques enable a researcher to produce a typology using the perceptions of a diverse set of individuals who are blind to the purpose of a given study. Hence, MDS-based typologies are less prone to researchers' biases than typologies developed through other methods. MDS involves several distinct phases of data collection and analyses. The procedures followed for each phase in this study and the results of each phase are discussed below.

Phase 1

Sample. We recruited 70 respondents, 27 men and 43 women, from four sources in Toledo, Ohio: a university office ($n = 7$), a technical staff office within an industrial company ($n = 10$), a neighborhood ($n = 38$), and an evening master's in business administration (M.B.A.) class ($n = 15$). All respondents worked full-time. Their average age was 37 years (s.d. = 14.69), and their average number of years of work experience was 15.69 (s.d. = 12.10).

Procedures. Respondents were asked to describe two incidents of "someone at work engaging in something considered to be deviant at their workplace, i.e., something that is considered to be wrong." We provided this colloquial definition of employee deviance instead of our theoretical definition because it was easier to understand. We also asked respondents to define deviance in their own words. Over 81 percent made specific reference

to violation of norms or rules, consistent with our definition. Both the descriptions and the definitions were in writing.

Next, the second author and a research assistant independently rephrased the descriptions the respondents provided to simplify them, to remove redundant words and phrases (most were a paragraph or longer), and to ensure that the descriptions were relatively generic and applicable across organizations and occupations. Descriptions repeating another description were then removed. The final pool of statements described 45 deviant workplace behaviors; the Appendix lists these behaviors.

We also had 12 judges, professors of management, independently assess how well each behavior fit our definition of employee deviance. They rated each behavior (yes or no) in terms of whether it was voluntary, potentially harmful to organizations, and likely to violate the norms of most organizations. The judges unanimously agreed that most of the behaviors fit our definition of deviance.

Phase 2

Sample. There were 180 respondents, 86 men and 94 women, all of whom were part-time evening students in an M.B.A. program at a midwestern university. All the respondents worked full-time. Their average age was 29 years (s.d. = 12.57) and their average number of years of work experience was 11.12 (s.d. = 11.06).

Procedures. We gave each respondent a survey containing the list of 45 deviant workplace behaviors and a brief description of a target behavior, which appeared at the top of the first page. The respondents rated each deviant behavior in terms of its similarity to or difference from the target behavior, using a nine-point Likert-type scale (1 = very similar, 9 = very different). We also asked respondents to specify the criteria they used to distinguish between the target behavior and each of the deviant behaviors.

Although MDS often involves having respondents compare every possible pair of stimuli [$n(n - 1)/2$], we asked our respondents to make only a subset of the 990 possible comparisons because having them address the full set would have been too cognitively taxing and likely to have resulted in fatigue, errors, and respondent attrition. A valid means by which to overcome the problems associated with comparing a large number of stimuli is to have respondents make a subset of comparisons (Thompson, 1983).

To determine the visual configuration and underlying dimensions of the deviant behaviors, we used the ALSCAL program (Young & Lewykcyj, 1979). This program derives spatial configurations of objects on the basis of the perceived differences between the objects. The greater the perceived difference between the objects, the greater the distance between them in the spatial configuration. We first created a dissimilarities matrix by computing the perceived differences between the pairs of deviant behavior descriptions (Kruskal & Wish, 1978). We then employed Torgeson's (1952) metric MDS analysis to create five different visual configurations of these deviant behavior descriptions, ranging from one dimension to five dimensions. An analogy

for this program is that it is like having a computer draw several maps of various dimensions for a set of cities by relying on only information about the distances between the cities. The resulting maps could be one-dimensional in that they would be placed along a single line; two-dimensional like a typical road map; three-dimensional like a globe with bas-relief reflecting elevation; and so forth. We used Kruskal's (1964) stress index to determine which map configuration explained the most variance. This stress index indicates how well data fit a particular configuration: the higher the stress, the poorer the fit.

Results. We conducted a scree test by plotting the stress indexes for all five map configurations (Cattell, 1986). The plot of stress indexes produces a curve. The appropriate configuration is determined on the basis of where (at which configuration) the stress index values begin to level off to form an almost horizontal slope. The one-dimensional solution had a stress index of .494. For the two-dimensional solution, the index made a considerable drop to .27, suggesting a better fit with the data. The amount of reduced stress leveled off for the three-, four-, and five-dimensional solutions with values of .199, .159, and .137, respectively. Hence, the scree results suggested that the two-dimensional solution provided the most parsimonious and accurate description of the data. Figure 1 shows the two-dimensional configuration.

Phase 3

Procedures. We derived a list of potential labels or attributes to describe the dimensions from the criteria that respondents said they used in phase 2 to compare the deviant behaviors and the target behavior. We selected the six most frequently cited criteria before looking at the two-dimensional solution. Four judges, senior candidates for doctorates in management, rated how well each attribute described each deviant behavior. Working independently and blind to the purpose of the study, they used five-point bipolar scales with the following attribute anchors: unintentional/intentional, not serious/serious, not harmful to company/harmful to company, not harmful to individuals/harmful to individuals, very unethical/ethical, and covert/overt.

Results. The judges' ratings were averaged for each attribute-behavior comparison. We used multiple regression analysis to assess relationships between the attributes and the two-dimensional configuration. The labels chosen were based on examination of the multiple correlation coefficients, F-values, and beta weights from the regression analysis (Kruskal & Wish, 1978). Table 1 provides those statistics.

Dimension 1. Relationships between the attributes and the first dimension suggested a label reflecting the seriousness or harmfulness of the deviant acts. The attributes that explained the most variance for dimension 1 were not serious/serious ($\beta = .66, p < .001$) and very unethical/ ethical ($\beta = -.67, p < .001$). Also significantly related to dimension 1 were not harmful to company/harmful to company ($\beta = .42, p < .001$) and not harmful to individuals/harmful to individuals ($\beta = .27, p < .05$). Thus, one end of this

dimension reflected deviant behaviors that were not serious, not harmful to the company, and not harmful to the individuals targeted, and the other end reflected deviant behaviors that were serious, harmful to the company, and harmful to the individuals targeted. Consequently, we labeled this first dimension "minor versus serious deviance."

Other attributes were also related to this dimension in ways consistent with the minor-versus-serious label. Covert/overt was negatively related to the not serious/serious attribute ($r = -.36$, $p < .01$) and positively related to the very unethical/ethical attribute ($r = .47$, $p < .01$). This relationship is not surprising given that harmful behavior is typically more covert than innocuous behavior. Similarly, the unintentional/intentional attribute was positively related to the not serious/serious attribute ($r = .57$, $p < .01$) and negatively related to the unethical/ethical attribute ($r = -.60$, $p < .01$). This relationship is consistent with the fact that behavior is perceived to be intentional to the extent that it is considered harmful (Hamilton, 1980). Examination of the two-dimensional configuration (Figure 1) also supports use of the label minor versus serious deviance. The less serious, less harmful deviant behaviors fell on the negative end of this dimension, and the more harmful or serious deviant behaviors fell on the positive end of this dimension.

Dimension 2. The relationships between the attributes and the second dimension suggested a label reflecting the extent to which deviant behaviors are interpersonal and harmful to individuals rather than non-interpersonal and harmful to organizations. The attribute not harmful to company/harmful to company was positively related to dimension 2 ($\beta = .30$, $p < .05$), and the attribute not harmful to individuals/harmful to individuals was negatively related to dimension 2 ($\beta = -.84$, $p < .001$). The covert/overt attribute was also negatively related to this dimension ($\beta = -.74$, $p < .001$). This relationship makes sense given that interpersonal behaviors are more likely to be overt than covert since at least one other person is usually present in the context of interpersonal behavior. Hence, one end of this dimension reflected behaviors that were harmful to individuals, not harmful to the organization, and overt, and the other end reflected behaviors that were harmful to the organization, not harmful to individuals, and covert. Consequently, we chose the label "interpersonal versus organizational deviance" for dimension 2. Observation of the two-dimensional configuration (Figure 1) supports use of this label. Deviant behaviors that fell on the negative end of this dimension were overt, interpersonal behaviors, directly harmful to individuals, and deviant behaviors that fell on the positive end of this dimension were non-interpersonal behaviors that were directly harmful to organizations.

Quadrant labels. A closer inspection of the two-dimensional configuration suggests that deviant acts not only vary along two dimensions but can also be classified into four categories. Figure 2 exhibits these categories.

The quadrant containing serious and organizationally harmful deviance was labeled "property deviance." This quadrant is consistent with Man-

FIGURE 1
Two-Dimensional Configuration of Deviant Behaviors

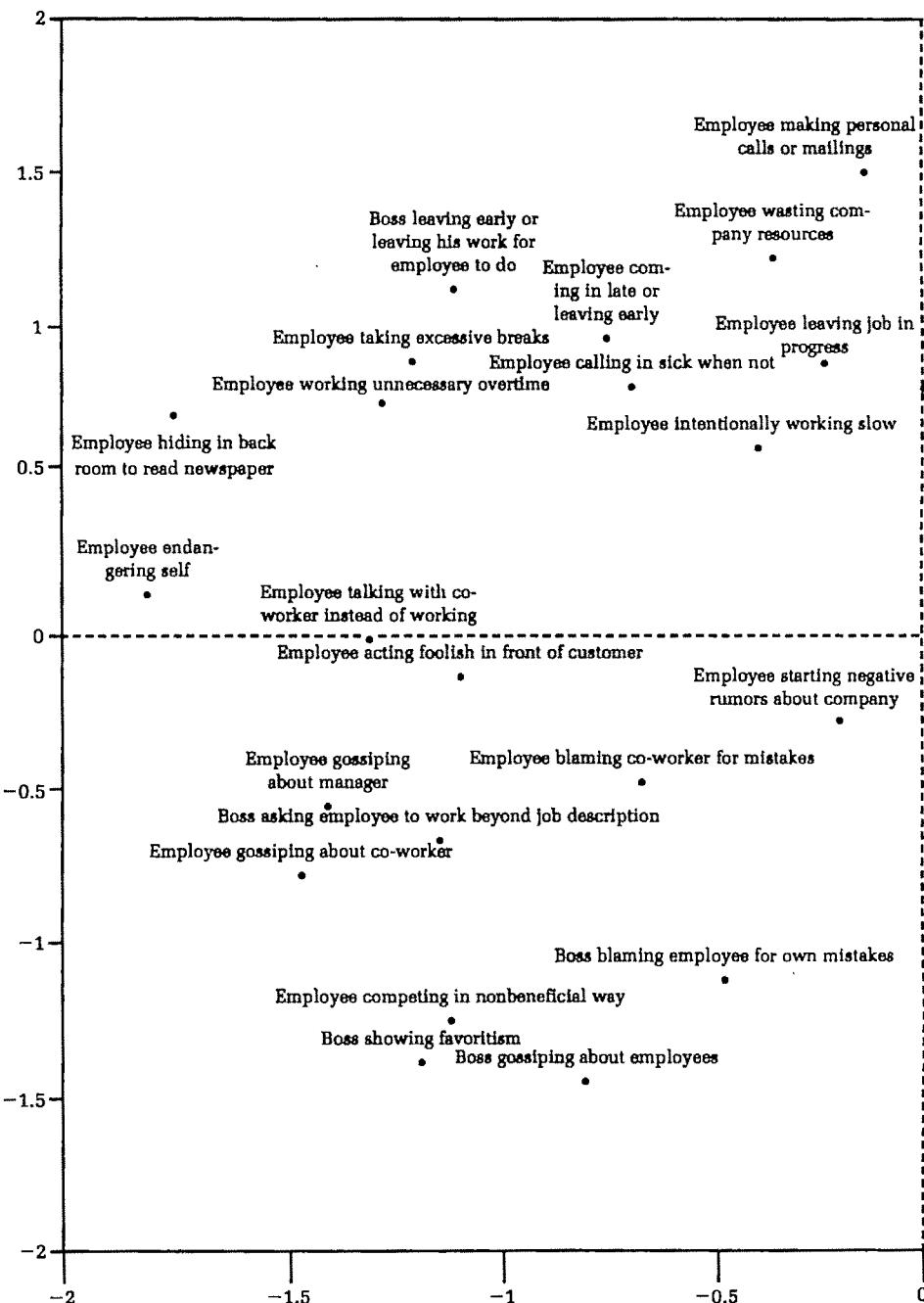


FIGURE 1 (continued)

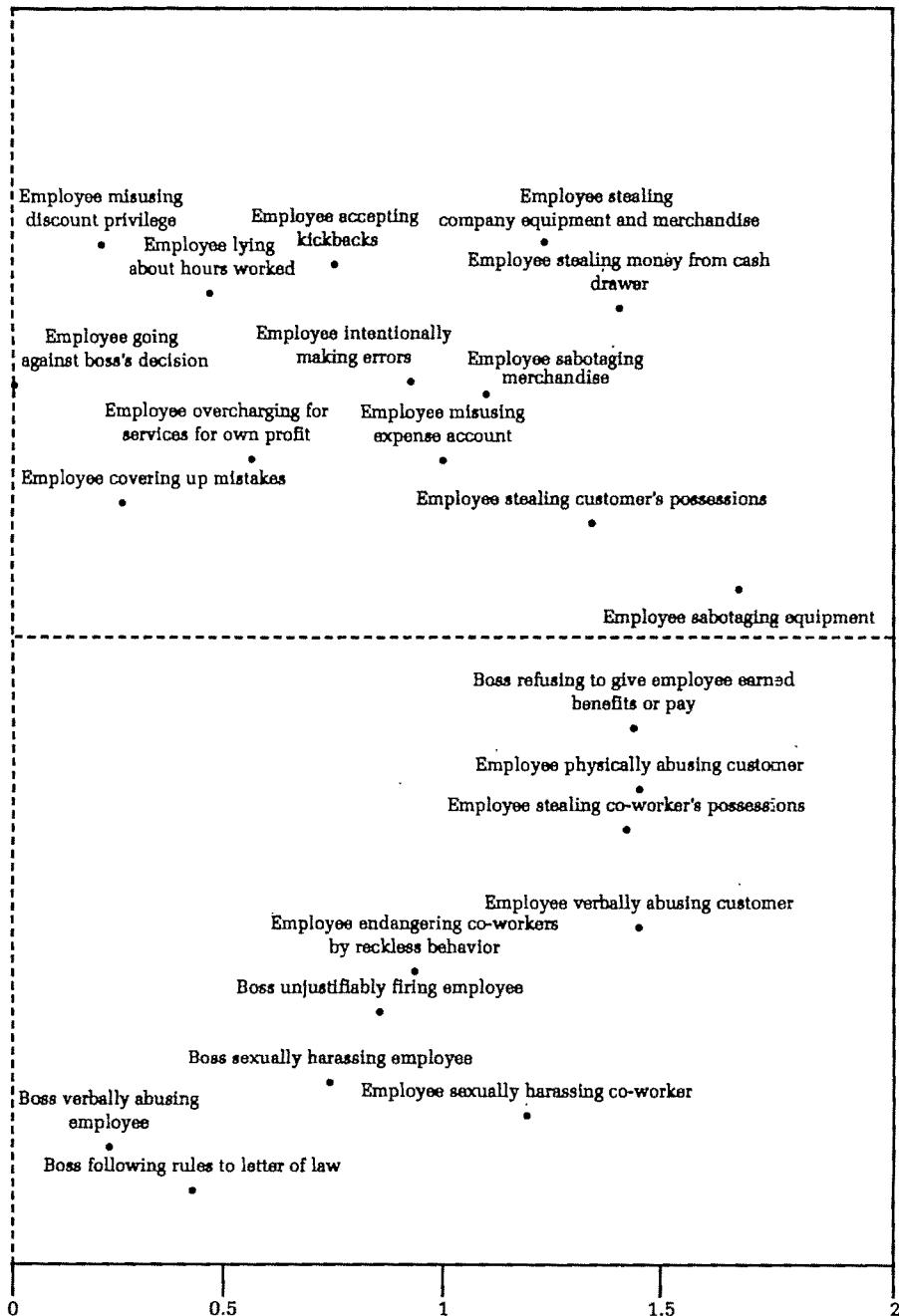


TABLE 1
Derivation of Labels for the Dimensions

Attributes	<i>R</i> ²	<i>F</i>	Dimension		Correlations			
			1	2	1	2	3	4
1. Unintentional/intentional	.24	6.64**	.34***	-.13				
2. Not serious/serious	.64	37.08***	.66***	-.12	.57**			
3. Not harmful to company/harmful to company	.35	7.38***	.42***	.30*	.38**	.64**		
4. Not harmful to individuals/harmful to individuals	.64	38.14***	.27*	-.84***	.00	.37**	-.21	
5. Very unethical/ethical	.55	25.85***	-.67***	.03	-.60***	-.89**	-.51**	.29*
6. Covert/overt	.33	10.43***	-.41***	-.74***	-.54**	-.36**	-.40**	.30* .47**

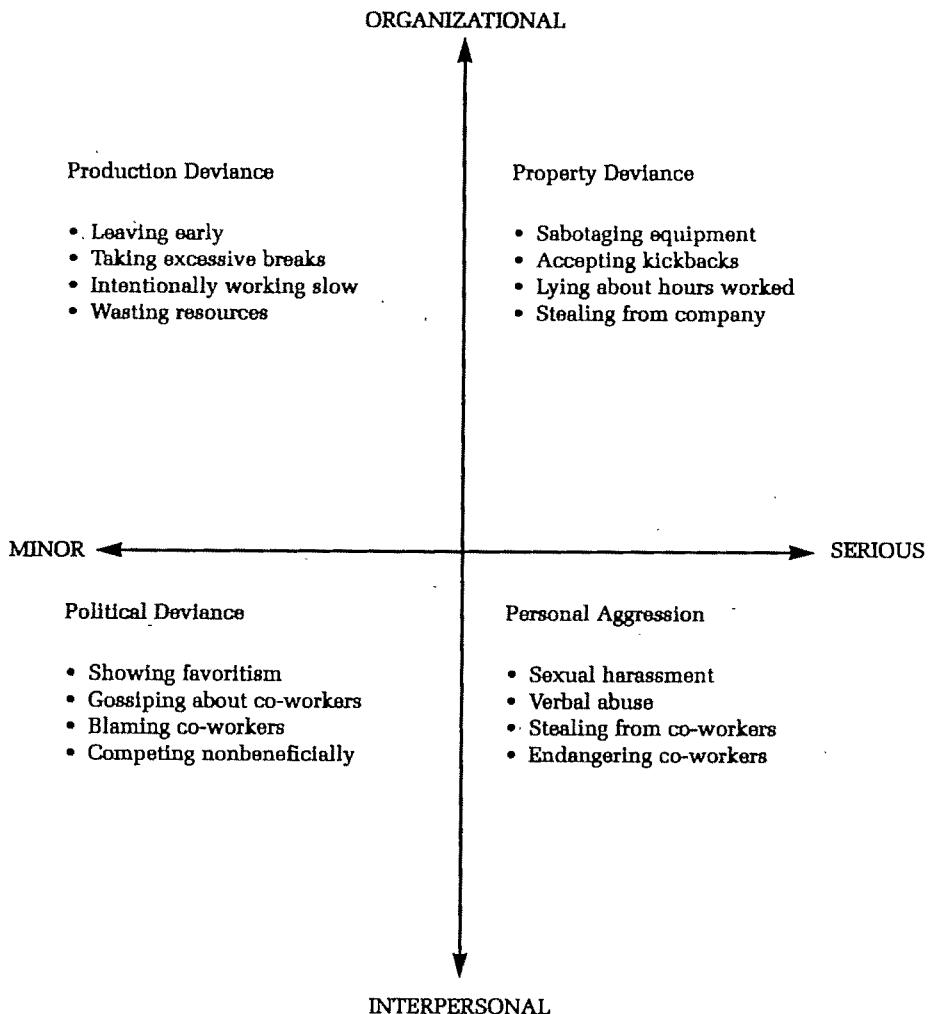
* p < .05

** p < .01

*** p < .001

gione and Quinn's (1974) counterproductive behavior and Hollinger and Clark's property deviance, which they defined as "those instances where employees acquire or damage the tangible property or assets of the work organization without authorization" (1982: 333). The quadrant reflecting relatively minor but still organizationally harmful deviant acts was labeled "production deviance." This quadrant is similar to Mangione and Quinn's (1974) doing little or nothing and Hollinger and Clark's production devi-

FIGURE 2
Typology of Deviant Workplace Behavior^a



^aThese lists are not exhaustive. We provide a set of the most typical behaviors for each category for illustrative purposes only.

ance, which they defined as "behaviors that violate the formally proscribed norms delineating the minimal quality and quantity of work to be accomplished" (1982: 333). The third quadrant contained minor and interpersonally harmful deviant behavior. We labeled this quadrant "political deviance," defining the behavior as engagement in social interaction that puts other individuals at a personal or political disadvantage. The final quadrant, containing serious and interpersonally harmful deviant behavior, was labeled "personal aggression," which we defined as behaving in an aggressive or hostile manner toward other individuals.

The four quadrants appeared to represent four distinct but related types of deviance. To garner empirical support for our post hoc interpretations of these categories, we had four judges who were blind to the study and its results independently code the behaviors. These judges, who were not the same as the judges used in phase 3, were doctoral students in management. They coded each behavior into one of four categories on the basis of the labels and definitions provided. Kappas were calculated for each of the four categories to measure the degree of interrater reliability. Overall, the kappas, which ranged from 74 to 89 percent, indicated high agreement between our typology and the raters' categorization of the behaviors. These results lend validity to our interpretation of the quadrant labels and their meanings.

DISCUSSION

The study reported here integrated numerous deviant workplace behaviors into a parsimonious framework. The results suggest that workplace deviance varies along two dimensions and can be classified into four types. The typology derived here makes a contribution to the literature by empirically validating Wheeler's (1976) distinction between serious and nonserious workplace offenses as well as Mangione and Quinn's (1974) and Hollinger and Clark's (1982) typologies, which distinguish between production and property deviance.

A more significant contribution of this study is that it builds upon these previous categorical schemes and produces a more accurate and comprehensive typology of workplace deviance. First, our typology identifies the underlying dimensions of deviance and thus clarifies not only the different categories of deviance but also how these categories are related to one another. Second, the typology incorporates two previously neglected forms of employee deviance, political deviance and personal aggression. To date, the limited literature on workplace deviance has focused primarily on production and property deviance (acts directed at organizations), ignoring interpersonal forms of deviance. As this study demonstrates, numerous behaviors directed at individuals, including verbal abuse, physical assault, and political behavior, are also perceived as deviant. These findings suggest that workplace deviance research should address social as well as organization-directed forms of deviance. This refocusing is important in light of growing concerns about reducing social injustice, discrimination, and interpersonal violence in workplaces.

This typology should prove useful in the development of general theories of workplace deviance. First, it creates meaningful patterns out of the wide range of deviant behaviors and enables researchers to look at the gamut of deviant behaviors as a parsimonious whole. Second, it identifies the relationships between these behaviors as well as their underlying constructs. This framework paves the way for creating an integrated theory or theories encompassing the behaviors found within each quadrant or across quadrants. Rather than continue to expend efforts on separate, unconnected, and potentially redundant studies of specific deviant acts, researchers can begin to develop and test theoretical models of the basic forms of deviant behavior, such as production deviance and personal aggression. Such theories will direct research attention and enable systematic exploration of this phenomenon and cumulation of findings.

The results of this study have implications for theories addressing the antecedents of workplace deviance. Opinions on the causes of deviance abound; some have argued that deviance results from individual attributes, such as low moral standards (Merriam, 1977), and others have argued for situational explanations of deviance, such as organizational inequities (Greenberg, 1990) and group norms (Siehl, 1987). This study suggests that different variables may explain different types of workplace deviance. For example, organizational variables might be more likely to influence deviance directed at harming organizations, and individual variables may be more likely to explain interpersonal forms of deviance.

The results of this study may also have implications for theories addressing the outcomes of workplace deviance. Deviance may be dysfunctional and threatening to the well-being of a social system (Best & Luckenbill, 1982), but it may have several positive outcomes as well: providing a safety valve, alerting group members to their common interests, and providing warning signals to organizations. This study, which clarifies the different types of workplace deviance, suggests that different forms of deviance may have different consequences. For example, interpersonal deviance may serve social functions for organization members—building group cohesiveness, for example—and organization-directed deviance may be more likely to serve signaling functions for organizations.

This typology, which incorporates a wide range of behaviors from various domains of organizational behavior, is also valuable in that it connects these previously unrelated domains of study. For example, the employee deviance literature, which has focused almost exclusively on organization-directed forms of deviance such as sabotage and theft, has remained largely separate from the growing literature on discrimination and sexual harassment in the workplace (Kahn & Robbins, 1985; Levinger, 1987), which addresses some behaviors that could be considered interpersonal forms of deviance. Our typology may provide a bridge between these two currently unrelated bodies of research by conceptually integrating organizational and interpersonal deviance. Similarly, this typology may offer a conceptual bridge between the traditional study of absenteeism and withdrawal (re-

flected in production deviance) and other, thus far unrelated behaviors that we also identified as forms of production deviance, such as wasting company resources and intentionally working slowly.

These findings also have managerial implications. Procedural justice research has shown that employees perceive consistent punishment as fair (Bennett, 1993); that is, punishment is perceived to be fair to the extent that similar behaviors are punished similarly and to the extent that it matches the seriousness of the offense committed (Wheeler, 1976). This study reveals employees' perceptions of the similarity between potentially punishable behaviors and their perceptions of the seriousness of these behaviors. The procedural justice findings, combined with the results of this study, suggest that managers who are seeking to be fair should apply similar types of punishments to deviant acts that are physically close to one another in the spatial configuration, such as intentionally making errors and engaging in sabotage. Managers should also match the severity of punishment to the perceived seriousness of a deviant act; for instance, employees accepting kickbacks and employees intentionally making errors should receive similar, severe punishments, whereas employees intentionally working slowly should receive less severe punishments.

Although this study focused on deviant workplace behavior rather than on unethical behavior, it does suggest that the study of ethics may benefit from an analogous multidimensional scaling study of unethical behavior. Robertson (1993), discussing ethics research, offered a number of recommendations. Specifically, she recommended that researchers clarify their operational definition of ethics, emphasize behavior as the key dependent variable, focus on theory development, and build broader predictive models of behavior. An MDS study like the one employed here would begin to address these exact issues.

To summarize, the present study makes a variety of theoretical and practical contributions. Its findings empirically validate previous categorical schemes of deviance and extend those typologies by identifying the thus far neglected interpersonal forms of deviance. Further, this typology should prove useful for developing much-needed general theories of workplace deviance, particularly theories concerning the antecedents and outcomes of forms of workplace deviance. It should also aid in creating aggregated measures of workplace deviance to be used to test those theories. More broadly, the typology generated here may provide a valuable conceptual bridge to previously unrelated domains of study and serve as a model for related domains of study, such as organizational ethics. Finally, this typology has practical implications, suggesting guidelines for ways in which managers can fairly allocate punishments for deviant behavior.

Several limitations of this study should be noted. First, it was not technically or conceptually feasible to use an exhaustive list of deviant behaviors. The purpose of our study was to develop a typology from which we could classify most deviant behaviors (not only those used to create the typology). That goal was accomplished. Second, although we attempted to

reduce researcher biases, they were not eliminated. Our biases may, for example, have entered the study when we selected and rephrased the behavioral descriptions to be used in the analysis. However, we only shortened descriptions, changing no content, and we removed only descriptions of already included behaviors. Second, we may have also been biased in our selection of the attributes used in interpreting the dimensions. However, we selected only the most frequently used attributes, prior to looking at the configuration. Further, since we based the interpretation of the dimensions on a large set of attributes, the inclusion or exclusion of an additional attribute is unlikely to have altered this interpretation. And finally, in deriving the names and meanings of the quadrants, we relied on our post hoc interpretation of the clusters. We attempted to offset the potential bias in this interpretation by validating our results with the judgments of independent and blind judges. In sum, we made a conscious effort to reduce the influence of our biases in the development of this inductively derived typology.

We hope this study will bring attention to the darker side of organizational behavior. It is our intention that this study serve as a springboard for additional empirical research into workplace deviance. Some future research directions include the development of aggregated measures of deviance based on the "four p's" (property deviance, production deviance, political deviance, and personal aggression) and the development of predictive models of deviance that take into account the wide range of deviant behaviors. Management research has developed a fairly comprehensive understanding of extrarole, prosocial, organizational citizenship behavior (e.g., Organ, 1988) but has largely neglected subrole, antisocial, deviant behavior. Researchers and practitioners need to understand not only behavior that is beneficial to organizations, but also behavior that is detrimental to them.

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APPENDIX

Deviant Behavior Descriptions Used in the Multidimensional Scaling Analysis

- Employee stealing customer's possessions.
Boss verbally abusing employee.
Employee sabotaging equipment.
Employee coming to work late or leaving early.
Employee lying about hours worked.
Employee gossiping about manager.
Employee starting negative rumors about company.
Boss sexually harassing employee.
Employee physically abusing customer.
Employee taking excessive breaks.
Employee sabotaging merchandise.
Employee overcharging on services to profit him- or herself.
Employee intentionally making errors.
Employee covering up mistakes.
Employee leaving job in progress with no directions so the job is done wrong.
Boss following rules to the letter of the law.
Employee gossiping about co-worker.
Employee intentionally working slowly.
Boss unjustifiably firing employee.
Employee sexually harassing co-worker.
Employee accepting kickbacks.
Employee endangering him- or herself by not following safety procedures.
Boss leaving early and leaving his/her work for employees to do.
Employee hiding in back room to read the newspaper.
Employee stealing company equipment/merchandise.
Employee acting foolish in front of customers.
Employee verbally abusing customers.
Employee working unnecessary overtime.
Employee calling in sick when not.
Boss showing favoritism to certain employees.
Boss gossiping about employees.
Employee talking with co-worker instead of working.
Employee stealing money from cash drawer.
Employee misusing discount privilege.
Employee wasting company resources by turning up the heat and opening the windows.
Employee blaming co-worker for mistakes.
Employee misusing expense account.
Employee going against boss's decision.

Employees competing with co-workers in a nonbeneficial way.
Boss blaming employees for his/her mistakes.

Boss refusing to give employee his/her earned benefits or pay.

Employee making personal long distance calls or mailing personal packages from work.
Employee endangering co-workers by reckless behavior.

Employee stealing co-worker's possessions.

Boss asking employee to work beyond job description.

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THE ACADEMY OF MANAGEMENT CODE OF ETHICAL CONDUCT

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We believe in discovering, sharing, and applying managerial knowledge.

PREAMBLE

Our professional goals are to enhance the learning of students, colleagues, and others and to improve the effectiveness of organizations through our teaching, research, and practice of management. We have five major responsibilities:

- To our students—Relationships with students require respect, fairness, and caring, along with recognition of our commitment to the subject matter and to teaching excellence.
- To managerial knowledge—Prudence in research design, human subject use, confidentiality, result reporting, and proper attribution of work is a necessity.
- To the Academy of Management and the larger professional environment—Support of the Academy's mission and objectives, service to the Academy and our institutions, and the recognition of the dignity and personal worth of colleagues is required.
- To both managers and the practice of management—Exchange of ideas and information between the academic and organizational communities is essential.
- To all people with whom we live and work in the world community—Sensitivity to other people, to diverse cultures, to the needs of the poor and disadvantaged, to ethical issues, and to newly emerging ethical dilemmas is required.

STUDENT RELATIONSHIPS

In our roles as educators, the central principles that underlie appropriate student-educator relationships are professionalism, respect, fairness, and concern.

Striving for teaching excellence. It is the duty of Academy members who are educators to prepare themselves carefully. Maintenance of current knowledge in the field requires a broad understanding of management theories, research and practice, and use of current classroom materials. Educators should have or develop expertise in the areas in which they teach. Effective teaching requires sufficient time allocated to preparation, clear classroom communication, timely grading, and a willingness to provide an explanation of a student's grade. Educators should act as role models in their relationships. They should also sensitize students to the ethical dimensions of management. In addition, educators have an obligation to present material without conscious bias and to make their own relevant biases known to their students. Educators should attempt to evaluate their teaching through some appropriate outcome assessment method which goes beyond concept retention.

Showing respect for students. It is the duty of Academy members who are educators to show appropriate respect for student feelings, interests, needs, contributions, and intellectual freedom. Students' right to privacy requires maintaining the confidentiality of academic records and private communications, unless disclosure is mandated by law, institutional policy, or morally compelling purpose. Educators must avoid manipulation, coercion, or exploitation of students (especially acts directed at securing monetary, ego, or sexual gratification) and should demonstrate a sensitivity to cultural and personal diversity by avoiding racial, sexual, religious, and ethnic discrimination.

Maintenance of objectivity and fairness. It is the duty of Academy members who are educators to treat students equitably. Fair treatment of students requires explaining and adher-

ing to academic requirements and standards. Any subsequent change in these requirements or standards, either of the institution or in an individual course, should appropriately recognize the impact on students. *Impartiality, objectivity, and fairness* are required in all dealings with students. Examinations should be carefully prepared and written work graded in an impartial manner. Educators should scrupulously avoid entering any overly personal relationship or accepting any gift or favor which might influence, or appear to influence, an objective evaluation of a student's work. Appropriate evaluation of student performance requires test design, assignments, and testing conditions which minimize the possibility of academic misconduct. It is the educator's responsibility to pursue appropriate disciplinary action.

Counseling of students. It is the duty of Academy members to be helpful and sensitive in counseling students. When serving as *academic advisors*, members must be knowledgeable about academic requirements and should communicate these clearly and fully to advisees. Educators may play critical roles in a variety of *counseling situations*. This requires careful analysis of the student and situation and calls for special expertise and competence. Counseling advice should be identified as an expression of the member's own opinion. Letters of recommendation require candor and fairness. Members should not make insupportable statements nor fail to disclose material facts.

ADVANCEMENT OF MANAGERIAL KNOWLEDGE

Academy member research should be done honestly, have a clear purpose, show respect for the rights of all individuals and organizations, efficiently use resources, and advance knowledge in the field.

Conducting and reporting. It is the duty of Academy members conducting research to design, implement, analyze, report, and present their findings rigorously. Research rigor includes careful design, execution, analysis, interpretation of results, and retention of data. Presentation of research should fairly represent the relevant literature and should include a treatment of the data that is honest and that reveals both strengths and weaknesses of findings. When important alternate hypotheses or explanations exist, they should be noted and data that disconfirm hypotheses should be acknowledged. Authorship and credit should be shared in correct proportion to the various parties' contributions. Whether published or not, ideas or concepts derived from others should be acknowledged, as should advice and assistance received. Many management-related journals have policies prohibiting or restricting potential articles from being reviewed concurrently in other outlets. These policies should be closely observed or there should be explicit discussion with the relevant journal editors concerning the intended multiple submissions. More than one report of essentially the same data and results should not be published unless the reports are explicitly directed to different audiences through different types of outlets. When several separate but related reports result from a single study, the existence of the different reports should be made known to the relevant journal editors and the reports should reference each other. Reviewer comments should be considered thoughtfully before a manuscript is submitted to a different journal.

Participants. It is the duty of Academy members to preserve and protect the privacy, dignity, well-being, and freedom of research participants. This requires both careful research design and informed consent from all participants. Risks and the possibility of harm to research participants must be carefully considered and, to the extent possible, be minimized. When there is a degree of risk or potential harm inherent in the research, potential participants—organizations as well as individuals—must be informed. Informed consent means explaining to potential participants the purposes and nature of the research so they can freely choose whether or not to become involved. Such explanations include warning of possible harm and providing explicit opportunities to refuse to participate and to terminate participation at any time. Because students and employees are particularly subject to possible coercion, even when unintended, special care must be taken in obtaining their informed consent. Third-party review is one means of protecting the interests of research participants. Research plans involving human participants should be reviewed by an appropriate third party, such as a university human subjects committee or a focus group of potential participants. Confidentiality and/or anonymity

questions must be resolved between researcher and potential research participants, both individuals and organizations, and when requested must be honored. Deception should be minimized and, when necessary, the degree and effects must be mitigated as much as possible. Researchers should carefully weigh the gains achieved against the cost in human dignity. To the extent that concealment and/or deception is necessary, the researcher must provide a full and accurate explanation to participants at the conclusion of the study, including counseling, if appropriate.

Dissemination. It is the duty of journal editors and reviewers to exercise their position of privilege in a confidential, unbiased, prompt, constructive, and sensitive manner. They have a duty to judge manuscripts only on their scholarly merits. Conflicts of interest may arise when a reviewer is in basic disagreement with the research approach or the line of research represented by a manuscript. In such cases, a reviewer should consult with the journal editor to decide whether to accept or decline to review the manuscript. Protecting intellectual property is a responsibility of the reviewer and the editor. The content of a manuscript is the property of its author(s). It is therefore inappropriate to use ideas or show another person a manuscript one has been asked to review, without the explicit permission of its author, obtained through the journal editor. Advice regarding specific, limited aspects of the manuscript may be sought from qualified colleagues so long as the author's intellectual property remains secure. Sharing of reviewing responsibilities is inappropriate. The review is the sole responsibility of the person to whom it was assigned by the journal editor. In particular, students and colleagues should not be asked to prepare reviews unless the journal's editor has given explicit approval. Anyone contributing to a review should receive formal recognition. Constructive review means providing critiques and comments in a spirit of collegiality with thoroughness, timeliness, compassion, and respect, and in ways intended to improve the quality of the manuscript.

Grants and contracts. It is the duty of Academy members to accurately represent themselves and their proposed projects and to manage those projects as promised. Representation means accurate disclosure of one's level of expertise and expected actual involvement, the outcomes that can be reasonably expected, the realistic funding level needed, and potential conflicts of interest. Grant and contract management requires independence and objectivity such that one does not compromise one's responsibilities or create conflicts of interest. One must also manage time and budget responsibly and use the funds as promised unless permission is explicitly granted to do otherwise.

THE ACADEMY OF MANAGEMENT AND THE LARGER PROFESSIONAL ENVIRONMENT

The Mission Statement of the Academy describes member benefits and professional opportunities which impose corresponding duties and service responsibilities.

Sharing and dissemination of information. To encourage meaningful exchange, Academy members should foster a climate of free interchange and constructive criticism within the Academy and be willing to share research findings and insights fully with other members.

Academy participation. The Academy is a voluntary association whose existence and operations are dependent on cooperation, involvement, and leadership from its members. Members should abide by the constitution, by laws, policies, and codes of the Academy. Members should consider offering their time and talent to carry out activities necessary to maintain the Academy and its functions. Officers and members should fulfill their Academy obligations and responsibilities in a timely, diligent, and sensitive manner, without regard to friendships or personal gain. Members should honor all professional meeting commitments including presentation of accepted papers and participation in scheduled roles as chair, discussant, or panel members. Where absence from scheduled meeting responsibilities is unavoidable, members must contact appropriate individuals and pursue suitable alternative arrangements. One should consider the impact one's projects or activities may have on the integrity or reputation of the Academy and not engage in those which may have possible negative implications. Members should not imply that their work is sanctioned by the Academy unless an appropriate Academy body has specifically done so.

Commitment to professional standards of conduct. By this code, the Academy provides

ongoing ethical guidance for its members. Members should work to raise membership consciousness concerning ethical responsibilities and encourage acceptance of these responsibilities. Members should notify appropriate Academy officers or committees of the practices or actions of members which they feel may violate Academy regulations or general standards of ethical conduct. In this manner, the aspirational and educational goals of this code are served through discussion of the ethical dilemmas and values of our profession.

Strengthening and renewal of the Academy. The Academy of Management must have continuous infusions of people and new points of view to remain viable and relevant as a professional association. Members may contribute to this infusion by encouraging participation in the Academy by all eligible individuals, and by assisting new and prospective members to develop their skills and knowledge, and their understanding of their professional obligations.

The professional environment for many Academy members includes the university community. The central values which underlie appropriate university participation are understanding, involvement, respect, fairness, and the pursuit of knowledge.

Participation in university leadership. Professors should take an active interest in university governance. Professors should be aware of university policies that affect the dissemination of knowledge and be involved in the development of such policies. Professors should endeavor to positively influence policies relating to the quality of education and service to students. Active organizational involvement requires exercise of personal voting rights and respect for such rights of others, without regard to rank or tenure. Professors should evaluate colleagues for purposes of promotion and/or tenure on the basis of appropriate Academic criteria fairly weighted in accordance with standards understood by the faculty and communicated to the subject of the evaluation. It is the duty of Academy members to treat their colleagues with respect and fairness. Members should safeguard confidential personal matters and avoid disclosing opinions expressed, attribution of statements, voting behavior, and outcomes. Members should address misunderstandings and conflicts with those directly involved and avoid speculative criticism that might damage the reputations of individuals or groups. When speaking or acting outside their university role, professors should avoid creating the impression that they are speaking or acting for their university and/or its administration. Professors should dispose of complimentary books requested from publishers by a manner other than sale.

All Academy members, whether affiliated with a university, business, governmental, service, or consulting organization have an obligation to interact with others in a professional manner.

Membership in the professional community. It is the duty of Academy members to interact with others in our community in a manner that recognizes individual dignity and merit. The responsible professional promotes and protects the rights of individuals without regard to race, color, religion, national origin, handicap, sex, sexual orientation, age, political beliefs, or academic ideology, and refrains from sexual harassment. In the spirit of intellectual inquiry, the professional should welcome suggestions and complaints openly without reprisal. Members should ensure that outside activities do not significantly diminish their availability and energy to meet their institutional obligations.

MANAGERS AND THE PRACTICE OF MANAGEMENT

Consulting with client organizations ("clients") has the potential for enriching the teaching and practice of management, for translating theory into practice, and for furthering research and community service. To maximize such potential benefits, it is essential that members who consult be guided by the ideals of competence, integrity, and objectivity.

Credentials and capabilities. It is the duty of consultants to represent their credentials and capabilities in an accurate and objective manner. Consultants shall accept only those assignments for which they have appropriate expertise. Consultants shall refrain from exaggerating their professional qualifications to secure prospective assignments. Consultants shall examine any factors (e.g., prior experience, capabilities, other commitments) that might limit their judgment or objectivity in carrying out an assignment. University endorsement of the consulting

activities of Academy members employed by academic institutions should not be represented or implied to potential clients unless the assignment is formally under university sponsorship or is so approved.

Obligations to clients. Consultants have a duty to fulfill their obligations to their present and prospective clients in a professionally responsible and timely manner. Consultants shall place the highest possible priority on their clients' interests. Consultants shall avoid or withdraw from situations in which their clients' interests come into serious conflict with their own. Consultants shall not serve two or more competing clients without the consent of all parties. Consultants shall fully inform their clients. This means presenting results and/or advice in an unbiased manner, and discussing fully with the client the values, risks, and limitations of the recommendations.

Client relations. Consultants must fulfill duties of confidentiality and efficiency as part of the relationship with their clients. Consultants shall maintain confidentiality with respect to their clients' identities and the assignments undertaken unless granted permission by the client. Consultants should exercise concern for the protection of client employees and other stakeholders by maintaining, in particular, appropriate confidentiality. Consultants shall not take personal or financial advantage of confidential information acquired as a result of their professional relationships, nor shall they provide the basis upon which others may take such advantage. Consultants should meet their time commitments and conserve the resources utilized.

Remuneration. It is the duty of consultants to negotiate clear and mutually accepted remuneration agreements for their services. Consultants shall provide a realistic estimate of the fees to be charged in advance of assignments. Fees charged shall be commensurate with the services performed.

Societal responsibilities. Consultants have a duty to uphold the legal and moral obligations of the society in which they function. Consultants should report to the appropriate authorities any unlawful activities that may have been uncovered during the course of engagements (except where one's functional professional code directs otherwise).

Students and employees. It is the duty of the consultant to safeguard student and employee rights when they are involved in consulting assignments. Consultants may involve students in work generated by engagements, especially if such work possesses learning potential, but students must not be coerced into participation. When they are so involved, students, as well as employees, should be fairly compensated and be made aware of the nature of the work they are doing.

THE WORLD COMMUNITY

As citizens of the world community, Academy members may have much to contribute in shaping global consciousness by their teaching, research, and service.

World view. Academy members have a duty to consider their responsibilities to the world community. In their role as educators, members of the Academy can play a vital role in encouraging a broader horizon for decision making, viewing issues from a multiplicity of perspectives, including those of the least advantaged. As researchers, members of the Academy should consider, where appropriate, increasing their exposure to other cultures via travel, study, and research. Where appropriate, research might highlight the responsible stewardship of the Earth's resources. In addition, members should take as a challenge the ongoing task of identifying evolving ethical issues by listening to those whose welfare is affected and by exploring the interaction of people and technology. In fulfilling their service responsibilities, members of the Academy should consider how they might lend their time and talent to enhance the world community through involvement in uncompensated public service.

SPECIAL RESEARCH FORUM CALL FOR PAPERS: ALLIANCES AND NETWORKS

Although there is a substantial literature on both alliances and networks, it is currently quite fragmented and disjointed. In part, this stems from different historical traditions among the North American, Japanese, and Western European literature. For example, Japan has a relatively long tradition of network integration, including linking firms into large conglomerate-like systems and quasi-integrating networks from suppliers to customers. Many companies in North America and Western Europe, however, have recently developed networking as an important strategy. The fragmented nature of the literature is also influenced, in part, by a variety of theoretical and disciplinary perspectives taken on these elusive entities. For instance, while some scholars may see alliances and networks as strategic new forms of organizing, others suggest that they are simply different tactical mechanisms used by established organizations to obtain needed resources.

The purpose of the proposed special research forum is to promote integrated empirical analyses of alliances and networks. While the unit of analysis may vary from a concentration on individuals, exchanges, units, or sponsoring firms, papers should promote synthesis by examining phenomena with different or integrated theoretical perspectives. For instance, traditional analyses of new international alliance formations from a foreign direct investment approach using the eclectic theory or transaction cost economics might be integrated with (1) an institutional view, (2) a population ecology perspective, or (3) a resource dependency approach.

Contributions could stress managerial, strategic, or organizational implications of a variety of networks and alliances for different collections of organizations. Analyses might concentrate on how effects stemming from different interorganizational modes of cooperation are altered by a number of organizational conditions, group processes, and individual factors.

Analyses of the factors influencing the stability, success, or failure of different alliance and network types might be useful in linking current views. Papers might integrate strategic contingency approaches with theories of sustainable development and human resource development to provide both new aspects of success and empirically link already identified predictors to new criteria. Empirically, this type of synthesis may call for combining longitudinal analysis of processes with cross-sectional treatment of context. Here, authors are encouraged to recognize the exploratory character of studying alliances and networks.

Since it is well known that alliance formation more readily occurs in areas characterized by technological change, meso studies linking alliance formation, operation, and death processes to larger more fundamental changes would necessarily stimulate more integrated views. Conversely, empirical analyses might help identify boundaries on existing theoretical perspectives, such as the extent to which transaction cost views are appropriate in newly forming international industries versus established ones dominated by older domestic firms.

Of course, a central concern may be to develop new methodological approaches or an emphasis on measurement. In highly unstable conditions, for instance, it may be necessary to develop or apply a unique methodology to isolate indirectly the presence of an alliance through its effects. Combinations of quantitative and qualitative methods may be needed to investigate integrative hypotheses and develop new insights into alliances and networks. Manuscripts might focus on the definition of major characteristics, such as the birth, operation, or death of an alliance or network, at different stages of development and how key constructs may vary substantially by a combination of theoretical perspectives, location of the entity, or characteristics of the sponsors and participants.

In preparing manuscripts, authors should follow *AMJ's* "Style Guide for Authors." Cover letters should request that papers be specifically considered for this special research forum. Send five copies of the manuscript to Angelo DeNisi, *Academy of Management Journal*, Institute of Management and Labor Relations, Livingston Campus, Rutgers University, New Brunswick, NJ 08903-5062. Papers must be received no later than October 31, 1995, to be considered for this forum. All submissions will be blind reviewed in accord with *AMJ's* normal review process and criteria. Prospective contributors desiring further information should contact Richard N. Osborn, U.S.A., at fax (313) 993-7864, phone (313) 577-4519, or John Hagedoorn, The Netherlands, at fax 31-43-25-84-95, phone 31-43-88-38-23.

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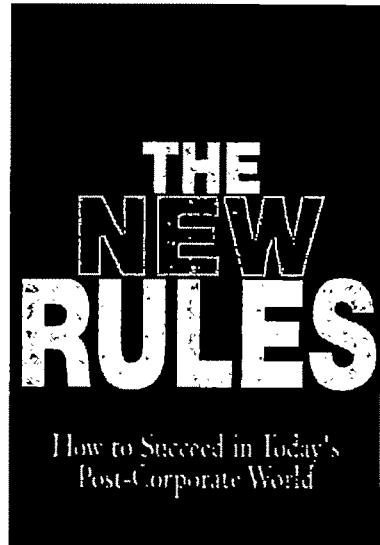
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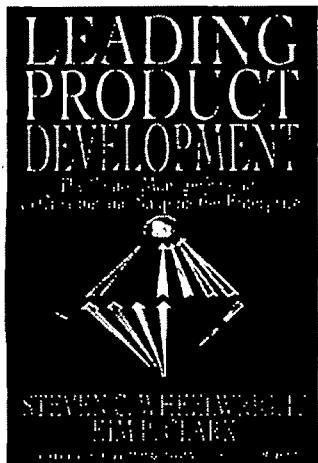
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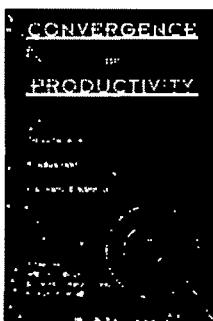
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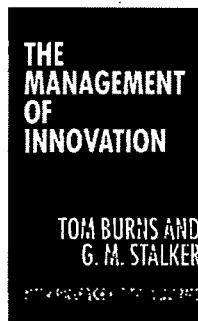
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